



U.S. Department  
of Transportation

**National Highway  
Traffic Safety  
Administration**

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**DOT HS 807 007  
Test Report**

**January 1986**



## **Side Impact Protection in Production Vehicles**

**MDB-to-Car Side Impact Test of a  
26° Crabbed Moving Deformable Barrier  
to a 1984 Chevrolet Celebrity  
at 33.6 mph**

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear only because they are considered essential to the object of this report.

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15. Supplementary Notes This test conducted as part of VRTC Project No. SRL 103 Side Impact Protection In Production Vehicles					
16. Abstract  This test report documents one of a series of ten crash tests to evaluate side impact protection in various vehicle models. Testing was conducted on a 1984 Chevrolet Celebrity 4-door Sedan at the TRCO Crash Test Facility, East Liberty, Ohio. The test vehicle was impacted on the left side by a moving deformable barrier, crabbed to 26 <sup>0</sup> , at 33.6 mph. The test was a simulation of a 90 <sup>0</sup> intersection collision with the striking vehicle travelling at 30 mph and the struck vehicle travelling at 15 mph. Occupant responses of two side impact dummies were measured. One dummy was located in the driver's designated seating position and one was located in the left rear seating position. The test date was December 13, 1985 and the ambient temperature was 25 <sup>0</sup> F.					
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## SECTION 1.0

### PURPOSE AND INTRODUCTION

#### PURPOSE

The main purpose of this test was to evaluate side impact protection in one of a fleet of 2-door and 4-door vehicles. The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

#### INTRODUCTION

A stationary 1984 Chevrolet Celebrity 4-door sedan was impacted on the left side by a Moving Deformable Barrier (MDB) on December 13, 1985. The test was to simulate an intersection collision with the striking vehicle travelling at 30 mph and the struck vehicle travelling at 15 mph. The orientation angle of the striking vehicle was 90° counterclockwise with respect to the longitudinal axis of the struck vehicle. The leading edge of contact was to be 37 inches forward of the vehicle center of gravity which is defined by accident investigation to be the midpoint of the wheelbase.

To simulate this collision, the MDB was to be towed into the stationary Chevrolet Celebrity at 33.5 mph with the MDB's wheels crabbed clockwise to 26°. The actual test speed was 33.6 mph and the actual leading edge of contact was 38.0 inches forward of the midpoint of the Chevrolet Celebrity wheelbase.

The vehicle was a baseline model with no structural modification. The driver door and left rear door were unpadded.

Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains data required by R & D. Appendix A contains pre-test and post-test vehicle and dummy photographs. Appendix B contains Data Plots. Appendix C contains Dummy Certification Data.



## SECTION 2.0

### GENERAL TEST AND VEHICLE PARAMETER DATA

The following data sheets describe the General Test and Vehicle Parameter Data.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: General Motors Corporation

MAKE/MODEL: Chevrolet Celebrity

VIN: 1G1AW19R9EG136140

BODY STYLE: 4 Door Sedan

MODEL YEAR: 1984

NHTSA NO.: R & D

COLOR: Gray

ENGINE DATA: TYPE: Transverse

CYLINDERS: 4

DISPLACEMENT 151 CID

TRANSMISSION DATA: Automatic

DATE VEHICLE RECEIVED: 12/5/85

ODOMETER READING: 8894

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING Yes

AUTOMATIC TRANSMISSION

Yes

POWER BRAKES Yes

AUTOMATIC SPEED CONTROL

Yes

POWER SEATS No

TILTING STEERING WHEEL

Yes

POWER WINDOWS No

TELESCOPING STEERING WHEEL

No

TINTED GLASS Yes

AIR CONDITIONING

Yes

RADIO No

ANTI-SKID BRAKE

No

CLOCK No

REAR WINDOW DEFROSTER

Yes

OTHER Delay windshield wipers

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? No
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

DATA FROM CERTIFICATION LABEL ON LEFT DOOR FACE OR "B" POST:

VEHICLE MANUFACTURED BY: General Motors Corporation

DATE OF MANUFACTURE: 7/84

GVWR: 4000 LBS., GAWR: FRONT 2154 LBS., REAR 1846 LBS.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 35 psi; REAR 35 psi

TIRES ON VEHICLE (MFG. & LINE, SIZE): General P185-75R14 M & S

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 2

IS SPARE TIRE "SPACE SAVER"? Yes

IS SPARE TIRE STANDARD EQUIPMENT? Yes

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS):

RIGHT FRONT	878	LBS.	RIGHT REAR	549	LBS.
LEFT FRONT	936	LBS.	LEFT REAR	511	LBS.
TOTAL FRONT WEIGHT	1814		LBS. (63.1 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1060		LBS. (36.9 % OF TOTAL VEHICLE WEIGHT)		
TOTAL DELIVERED WEIGHT	2874		LBS.		

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 26.6	;LF 26.4	;RR 26.7	;LR 26.6
PRE-TEST ATTITUDE:	RF 27.3	;LF 26.8	;RR 24.6	;LR 24.3
POST-TEST ATTITUDE:	RF 25.2	;LF 26.9	;RR 23.1	;LR 25.1

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 152 LBS. CARGO:

RIGHT FRONT	906	LBS.	RIGHT REAR	738	LBS.
LEFT FRONT	1008	LBS.	LEFT REAR	722	LBS.
TOTAL FRONT WEIGHT	1914		LBS. (56.7 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1460		LBS. (43.3 % OF TOTAL VEHICLE WEIGHT)		
TOTAL TEST WEIGHT	3374		LBS.		

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 0 LBS.

TEST FLUID DATA

TEST FLUID TYPE: RED STODDARD SOLVENT 2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY\*: NA GALLONS ACTUAL

TEST VOLUME: 9.0 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 15.7 GALLONS

DETAILS OF FUEL SYSTEM: DNA

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ELECTRIC FUEL PUMP: Yes

FUEL INJECTION: Yes

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? DNA

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR, POST, GLOVEBOX, ETC.

VEHICLE LOAD (UP TO CAPACITY): FRONT 35 psi; REAR 35 psi

RECOMMENDED TIRE SIZE: P185 75R14 LOAD RANGE X B, C,   

VEHICLE CAPACITY: TYPES OF SEATS: Front - Bench  
Rear - Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 3 FRONT

3 REAR

CARGO LOAD 165 LBS.

6 TOTAL

TOTAL 1065 LBS.

\*WITH ENTIRE FUEL SYSTEM FILLED WITH FUEL TANK THROUGH CARBURETOR BOWL.



### TEST CONDITIONS

TEST NUMBER: 851213

DATE OF TEST: December 13, 1985

TIME OF TEST: 13:34

WIND VELOCITY: 6-12 mph 342°W

HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA: 25° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 66° F

### SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	3374	3387
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	33.6	33.5
IMPACT POINT (INCHES)**	38.0	37

### DUMMIES

	<u>DRIVER</u>	<u>MIDDLE PASSENGER</u>	<u>RT. FRONT PASSENGER</u>	<u>LEFT REAR PASSENGER</u>	<u>RT. REAR PASSENGER</u>
TYPE:	SID			SID	
SERIAL NO.:	119			016	
INSTRUMENTATION:					
HEAD ACCEL.:	Yes			Yes	
CHEST ACCEL.:	Yes (Upper/Lower)			Yes (Upper/Lower)	
FEMUR L.C.'S:	No			No	
OTHER:	Pelvis/Ribs			Pelvis/Ribs	

RESTRAINT SYSTEM: Both dummies were unrestrained

\* As measured over final one foot of travel.

\*\* As measured forward of the midpoint of the test vehicle's wheelbase.

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #119	PASSENGER #016
Head	<u>Side glass, window sill</u>	<u>C-pillar</u>
Chest	<u>Inner door panel</u>	<u>Inner door panel</u>
Abdomen	<u>Inner door panel</u>	<u>Inner door panel</u>
Left Knee	<u>Inner door panel</u>	<u>Inner door panel</u>
Right Knee	<u>Left Knee</u>	<u>Left Knee</u>

DOOR OPENING:

	LEFT	RIGHT
Front	<u>DNA*</u>	<u>Normal</u>
Rear	<u>Tools required</u>	<u>Normal</u>

SEAT MOVEMENT:

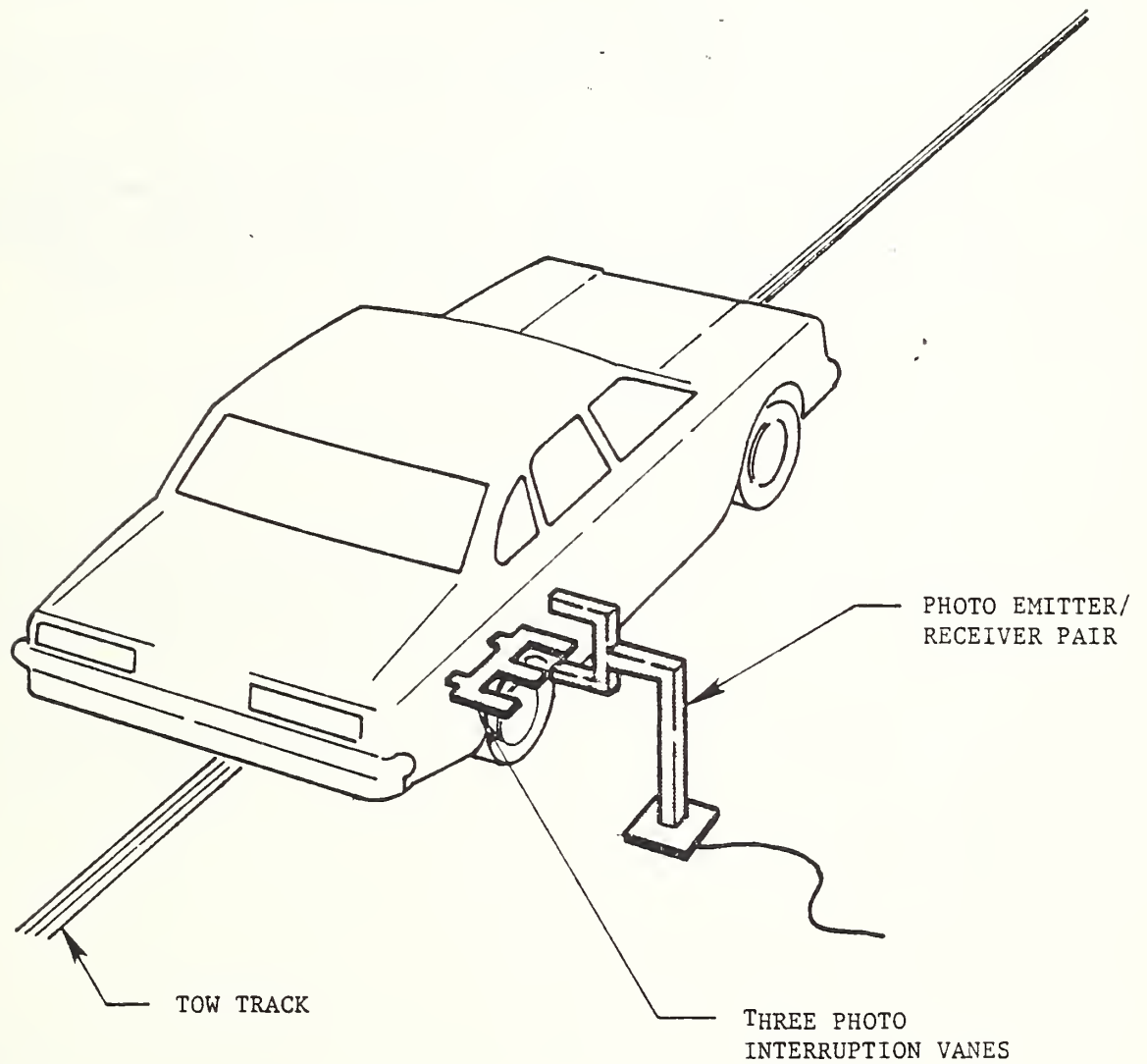
	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>None</u>	<u>None</u>
Rear	<u>None</u>	<u>None</u>

GLAZING DAMAGE: All left side window shattered except the rear most  
window.  
   
 

OTHER NOTABLE IMPACT EFFECTS:

\*CTM to open door at a later date.

## IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

Test Weight = Unloaded Delivered Weight +  
                  Number of Dummies X 174 lbs.) +  
                  Cargo Weight  
                  = 2874 + (2 X 174) + 165 lbs.  
                  = 3387 lbs.

To achieve test weight, 9.0 gallons of Stoddard Solvent was added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a KJ Law Force Plate.

## TEST ANONALIES

The driver dummy's upper spine X axis accelerometer, T01XG1, did not record accurate data after 40 msec due to a pulled pin.

The driver dummy's Y axis pelvis accelerometer, PEVYG1, did not record accurate data after 25 msec due to a crushed cable.

The following data channels did not return to zero following the crash pulse:

Passenger dummy's lower spine Y axis accelerometer - T12YG4

Vehicle's right rear sill X axis accelerometer - RRSXG

Vehicle's trunk floor X axis accelerometer - TFRXG

These non-return to zero problems are believed to be due to signal conditioner zeroing potentiometers shifting during the crash pulse. These potentiometers are being replaced.

The vehicle's rear deck Z axis accelerometer, RDKZG, did not record accurate data throughout the test due to a pulled pin.



SECTION 3.0  
DATA REQUIRED BY R&D

The following pages are included in this section:

1. Dummy temperature control and positioning data
2. Dummy kinematic summary
3. Vehicle crush data
4. Dummy and vehicle accelerometer location and data summary
5. High speed camera information
6. Transducer information

#### DUMMY TEMPERATURE CONTROL AND POSITIONING

The vehicle was kept inside the temperature controlled crash test building until approximately 2 hours prior to the test. Temperature inside the vehicle and ambient temperature at the crash area were recorded. Dummy temperature while outside the crash test building was maintained portably until approximately 1 minute prior to the test.

The following Side Impact Dummy Seating Procedure summarize the steps taken to position the instrumented, calibrated dummies in the test vehicle.



## SIDE IMPACT DUMMY SEATING PROCEDURE

### 1. Seat Positioning

A. Place seat at the longitudinal midpoint of fore to aft adjustment (forward most locking position to rear most locking position). If no locking position is available at mid-travel, use the position immediately rearward of mid-travel.

B. If the seat back angle is adjustable, place it in the manufacturer's stated nominal design location. If not specified, set it at the first detent rearward of 25°.

C. Adjustable head restraints are set such that the top surface of the restraint is level with the cg of the dummy's head.

D. If the seat is equipped with adjustable side or lumbar supports, they are set in their "released" or full back positions.

E. All other seat adjustments are positioned to their mid-travel locations. If locking positions are not available at these mid-points, use the position immediately rearward, down, left or clockwise of mid-travel. Clockwise is defined looking rear to front or left to right relative to the vehicle. This also applies to adjustable steering columns.

### 2. H-point Determination

A. The SAE three-dimensional H-point machine (SAE J826 APR80 - 50th percentile male configuration) is used to locate the H-point for each surrogate.

B. The H-point machine is positioned on the seat as follows:

1. Bucket or Contoured Seats - The H-point machine is centered on the bucket or contour such that its midsagittal plane is vertical and longitudinal.

## 2. Bench Seats

a. driver position - The H-point machine is positioned such that its midsagittal plane is vertical, longitudinal, and contains the steering wheel center point.

b. outboard passenger positions - The H-point machine is positioned such that its midsagittal plane is vertical, longitudinal, and the same distance from the longitudinal vehicle centerline as that for the driver position.

c. Center passenger positions - The H-point machine is positioned such that its midsagittal plane is vertical and contains the longitudinal vehicle centerline.

C. Locate the H-point position using the steps outlined in sections 4 through 6 of SAE Standard J826 APR80, unless otherwise specified in section 1 or 2 of this document. Record the coordinates of this point, relative to the vehicle, for use in section 4 of this document.

## 3. Test Dummies

A. All NHTSA side impact crash tests use the NHTSA Side Impact Dummy (SID) as the surrogate(s), unless otherwise specified by the CTM.

B. All dummy joints are inspected for mobility prior to each test usage and reset to hold between 1 and 2 g's. This amount just barely restrains the weight of the individual limb when it is extended horizontally.

C. Each test dummy is clothed in form-fitting cotton stretch underwear with short sleeves and mid-calf length pants. Each foot of the dummy is equipped with a size 11EE shoe which meets the configuration, size, sole, and heel thickness specifications of MIL-S-13192 and weighs  $1.25 \pm 0.2$  pounds. All the above items are supplied by the contractor.

## 4. Initial Dummy Placement

The SID dummy(s) is placed in the vehicle seat with its pelvis

positioned such that a lateral line passing through the dummy H-point is perpendicular to the longitudinal centerplane of the vehicle.

A. Bucket or Contoured Seats. The dummy is centered on the bucket or contoured seat such that its midsagittal plane is vertical and longitudinal. The legs are positioned as follows, keeping the femur and tibia centerlines in a plane that is as near to vertical as possible.

1. driver position placement - The right foot of the dummy is placed on the undepressed accelerator pedal, with the heel resting on the floorpan as far forward as possible. The left knee is positioned such that the distance from the outer surface of the knee pivot bolt to the dummy's midsagittal plane is 6 inches.

2. passenger position placement - The knees of the dummy are initially set 11 1/2" apart, measured between the outer surfaces of the knee pivot bolt heads. If a center tunnel prevents this, place the feet on either side of the tunnel.

B. Bench seats.

1. driver position placement - The dummy is placed in the seat as outlined in section 4.A.1 except that its midsagittal plane is vertical, longitudinal and contains the steering wheel center point.

2. outboard passenger positions - The dummy is placed in the seat as outlined in section 4.A.2 except that its midsagittal plane is vertical, longitudinal, and the same distance from the vehicle centerline as that for the driver position.

3. center passenger positions - The dummy is positioned in the seat as outlined in section 4.A.2 except that its midsagittal plane is vertical and contains the vehicle centerline.

## 5. Initial Dummy Positioning

A. H-Point Positioning

1. With the dummy laterally positioned as in section 4, insert the pelvis angle indicator bar in the hole provided above, and to the rear of the dummy H-point. Position the longitudinal pelvis angle between 23° and 25° to the horizontal. This may be accomplished by raising the legs or flexing the upper torso forward and allowing the

pelvis to rotate. The lateral pelvis angle is to be horizontal.

2. Apply sufficient force on the lower torso in a horizontal and vertical direction to place the dummy H-point at the coordinates obtained in section 2.

3. If the H-point cannot be placed at the desired coordinates, adjust the pelvis angle within the  $2^{\circ}$  band and reposition to the coordinates. After repositioning the H-point, any deviation from the desired coordinates is recorded and used to indicate actual H-point locations. This deviation is not to exceed  $1/2$ ".

B. Upper Torso Positioning. The dummy's upper torso should rest against the seat back. If not, adjust the upper torso, maintaining the H-point location and pelvis angle, so that the dummy's back rests against the seat back. If this cannot be done, modify the H-point location and/or pelvis angle within the allowable bands until the back rests against the seat.

#### 6. Final Dummy Positioning

A. Driver Position. Without inducing pelvis or torso movement, the dummy's right foot is placed on the undepressed accelerator pedal with the heel resting as far forward as possible on the floorpan. The left foot is set perpendicular to the lower leg with the heel resting on the floorpan in the same lateral line as the right heel. If possible within these constraints, the dummy's thighs should be in contact with the seatpan.

B. Front Passenger Positions. Without inducing pelvis or torso movement, place the dummy's feet on the vehicle's toeboard with the heel resting on the floorpan as close as possible to the intersection of the toeboard and floorpan. If the feet cannot be placed on the toeboard, they are set perpendicular to the lower legs and placed as far forward as possible such that the heels rest on the floorpan.

C. Rear Passenger Positions. Without inducing pelvis or torso movement, the feet are placed flat on the floorpan and beneath the front

seat as far forward as possible without front seat interference. If necessary, change the distance between the knees as required to place the feet beneath the seat. Record the new distance.

D. Vehicles with wheelhouse projections in the passenger compartment. The foot (feet) in question is placed in the wheel of the floorpan/toeboard and not in the wheelhouse projection. This is done by twisting the foot at the ankle, maintaining the upper and lower leg positions outlined in section 4. If this does not resolve the situation, move the leg of the foot in question just enough to achieve the correct position, keeping the femur and tibia centerlines in a plane that is as near to vertical as possible. Record the new distance between the knees.

E. The knee positions are to be as outlined in section 4, unless modified as in section 6. The plane containing the femur and tibia centerlines for each leg is to be as near to vertical as possible without inducing pelvis or torso movement. Record the distance between the knees for each dummy.

F. Prior to conducting the test, the dummy position is visually checked. The dummy is to be properly positioned laterally with its midsagittal plane vertical and longitudinal, and the upper torso resting against the seat back. The H-point and pelvis angle are to be within the specified ranges and the foot, knee, and leg placements are to be as outlined. The CTM is to be satisfied with the final dummy position and any deviations from this procedure are to be approved by the CTM.

G. The final dummy position is recorded. These measurements are to include, but not be limited to, pelvis and head angles as well as actual H-point and head cg locations relative to the vehicle. The straight-line distance from the H-point to the center of the outer ankle bolt is also recorded for one of the legs (eg. left H-point to left ankle bolt).



## DUMMY IN-VEHICLE POSITION RECORDING SHEET

VEHICLE NHTSA NO. R & D

MFR./MAKE/MODEL: Chevrolet Celbrity 4-door

FRONT SEAT TYPE:   X   BENCH  
           BUCKET  
           SPLIT BENCH

ADJUSTER TYPE: X MANUAL  
POWER

BUCKET SEAT BACK TYPE:  X  FIXED  
ADJUSTABLE

TECHNICIANS:

1. Robert Benavides

2. John Clarridge

POSITIONING DATE: 12/13/85

3.

AMBIENT TEMP.: 72° F. TIME: 9:00

**DRIVER DUMMY #119**

PELVIS ANGLE  $23^{\circ}$   
 DRIVER DUMMY #119

HEAD  $22$  "  
 TARGET\*  $2$  °

KNEE  $24 \frac{7}{16}$  "  
 JOINT  $91$  °

APPROX. "H"  $9 \frac{7}{8}$  "  
 POINT  $110$  °

FORE MIDPOINT AFT

**REAR PASSENGER DUMMY #016**

PELVIS ANGLE  $24^{\circ}$   
 REAR PASSENGER DUMMY #016

$15 \frac{3}{16}$  "HEAD  
 $4$  ° TARGET\*\*

$25 \frac{5}{8}$  "KNEE  
 $105$  ° JOINT

APPROX.  $14 \frac{1}{8}$  " "H"  
 $140$  ° POINT

AFT MIDPOINT FORE

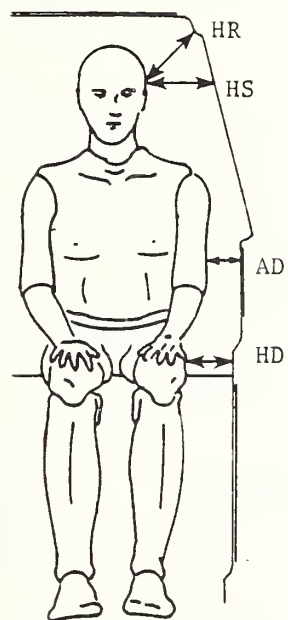
**DRIVER DUMMY #119**

DOOR GLASS  $13 \frac{3}{8}$  "  
 HEIGHT\*\*\*  $10 \frac{3}{4}$  "

LATERAL BAR ADJUSTABLE POINTER

**PASSENGER DUMMY #016**

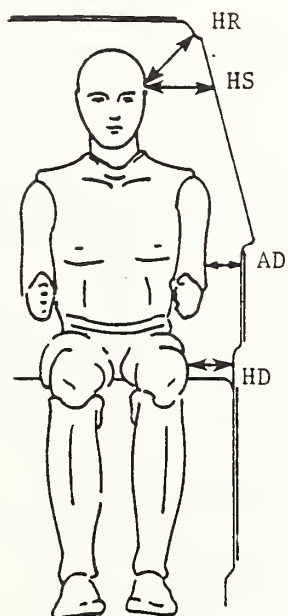
DOOR GLASS  $12 \frac{5}{8}$  "  
 HEIGHT  $10 \frac{5}{8}$  "



DRIVER  
#119

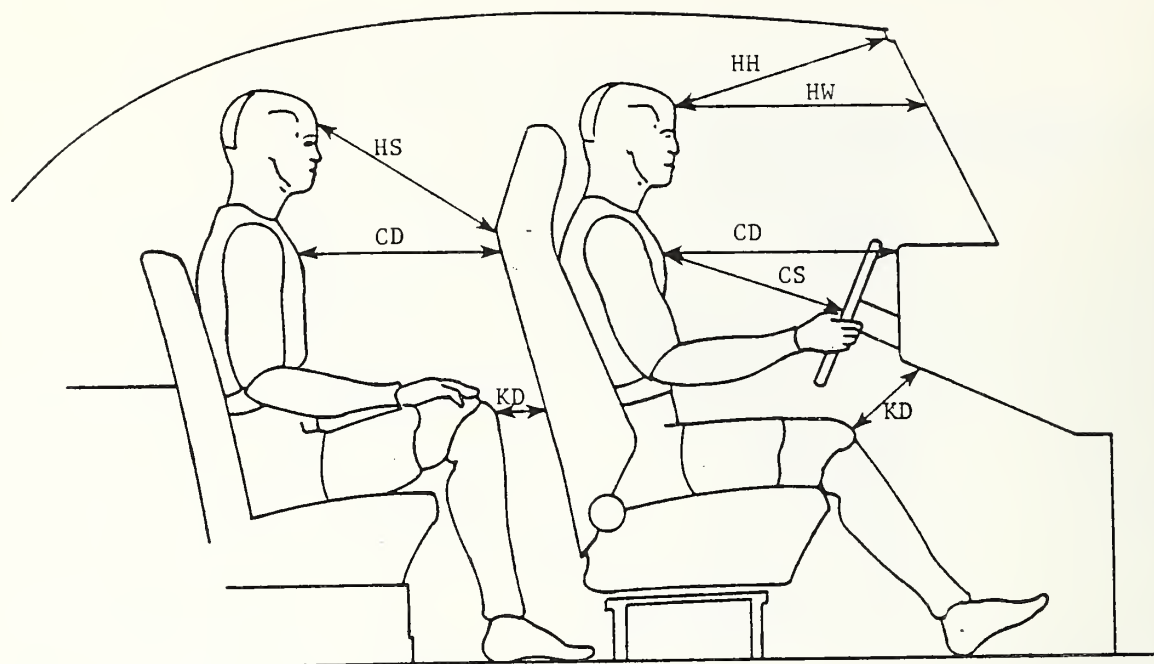
PASSENGER  
#016

HR	6 5/16	5 3/4
HS	9 3/4	8 1/2
AD	5 1/6	4 7/8
HD	7 1/16	7 3/16



ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



DRIVER  
#119

PASSENGER  
#016

HH	14 1/16	DNA
HW	18 13/16	DNA
HS	DNA	26 3/4
CD	19 5/8	19 11/16
CS	11 15/16	DNA
KDL	4 9/16	4 3/8
KDR	4 5/8	4 5/8

ALL MEASUREMENTS IN INCHES

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS



# SAE 3D H-POINT MACHINE LOCATION AND DUMMY LOCATION DATA

	DRIVER #119*	PASSENGER #016*
SAE 3D H-POINT MACHINE LOCATION:	X = -11.31 Z = 8.24	X = -45.06 Z = 8.06
DUMMY H-POINT LOCATION:	X = -11.37 Z = 8.24	X = -44.68 Z = 7.19
DUMMY HEAD LOCATION:	X = -17.94 Z = 33.92	X = -53.82 Z = 32.86
DUMMY HEAD ANGLE:	+1°	-5°
DUMMY PELVIC ANGLE:	23°	24°
DUMMY H-POINT TO LEFT ANKLE BOLT DISTANCE:	30.5	26.3

\*All location measurements referenced to left most front seat track bolt in two-dimensional rectangular coordinates: +X = forward, +Z = upward.

Note: With the front seat in mid position the rear seat passenger's legs were restricted from being properly placed. As a result, the vertical location of the dummy's H-point was lower than it was supposed to be.

All dimensions in inches except as noted.

## DUMMY KINEMATIC SUMMARY

### DRIVER

During impact, the dummy's left leg, hip and left side of the torso impacted the driver's side inner door panel. The dummy's head rotated down and to the left and contacted the driver's side door glass and window sill. When the dummy rebounded from the door, it rotated 90 degrees counter clockwise while it simultaneously translated across the occupant compartment. The dummy came to rest seated on the right side of the car facing to the left.

### PASSENGER

During impact, the dummy's left leg, hip and left side of the torso struck the inner panel of the left rear passenger door while the dummy's head impacted the C-post. The dummy rebounded and came to rest seated upright on the opposite side of the vehicle.

VEHICLE EXTERIOR PROFILES AND STATIC CRUSH  
ZERO DISTANCE AT PROJECTED IMPACT POINT\*

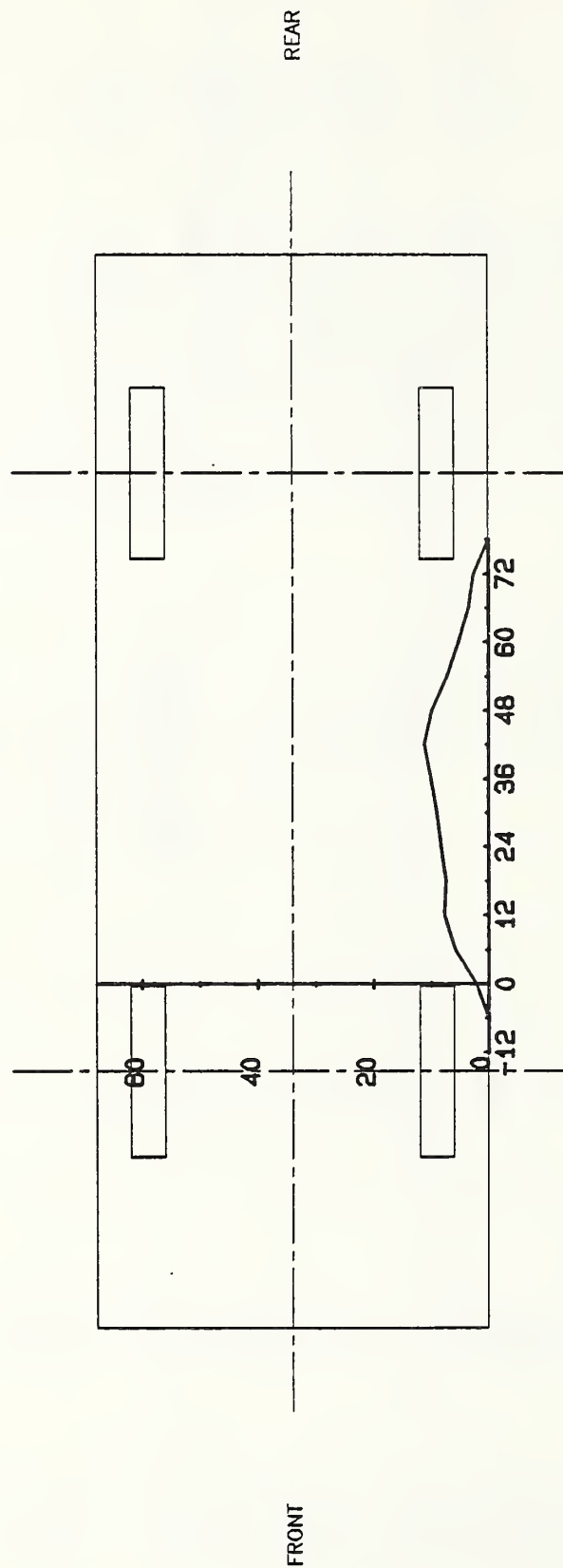
LOCATION	HEIGHT (in)	6	0	6	12	18	24	30	36	42	48	54	60	66	72	78
PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)																
Axle Height	11.6	X	16.4	17.3	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.3	17.3	17.3	17.3	X
H-Point	23.6	X	14.0	14.0	14.0	13.9	13.9	13.9	13.8	13.8	13.9	13.9	14.0	14.1	14.1	13.5
Mid Door	DNA #	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Window Sill	34.9	16.5	16.4	16.3	16.1	16.0	16.0	16.0	16.0	16.0	16.2	16.2	16.3	16.4	16.5	16.4
Window Top	53.3	X	X	X	X	X	X	24.0	24.0	24.2	24.3	24.3	24.3	24.3	24.3	24.3
POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)																
Axle Height	11.6	X	18.5	23.0	24.9	24.6	25.4	26.2	27.1	28.3	27.0	24.5	22.5	20.7	19.9	X
H-Point	23.6	X	18.3	23.5	25.6	25.6	26.0	26.8	27.1	27.5	28.4	29.1	29.4	29.2	27.0	16.1
Mid Door	DNA #	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Window Sill	34.9	18.3	18.3	20.6	22.1	23.1	24.1	24.8	25.3	25.9	27.8	27.8	28.1	28.4	24.0	19.5
Window Top	53.3	X	X	X	X	X	X	26.8	27.9	28.8	29.4	28.6	27.9	27.3	26.8	26.3
STATIC CRUSH (IN)																
Axle Height	11.6	X	2.1	5.7	7.7	7.4	8.2	9.0	9.9	11.1	9.8	7.2	5.2	3.4	2.6	X
H-Point	23.6	X	4.3	9.5	11.6	11.7	12.1	12.9	13.3	13.7	14.5	15.2	15.4	15.1	12.9	2.6
Mid Door	DNA #	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Window Sill	34.9	1.8	1.9	4.3	6.0	7.1	8.1	8.8	9.3	9.9	11.6	11.6	11.8	12.0	7.5	3.1
Window Top	53.3	X	X	X	X	X	X	2.8	3.9	4.6	5.1	4.3	3.6	3.0	2.5	2.0

\* Projected impact point is 37 inches forward of driver's side wheelbase midpoint. Column readings are front to rear from left to right.

\*\* Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

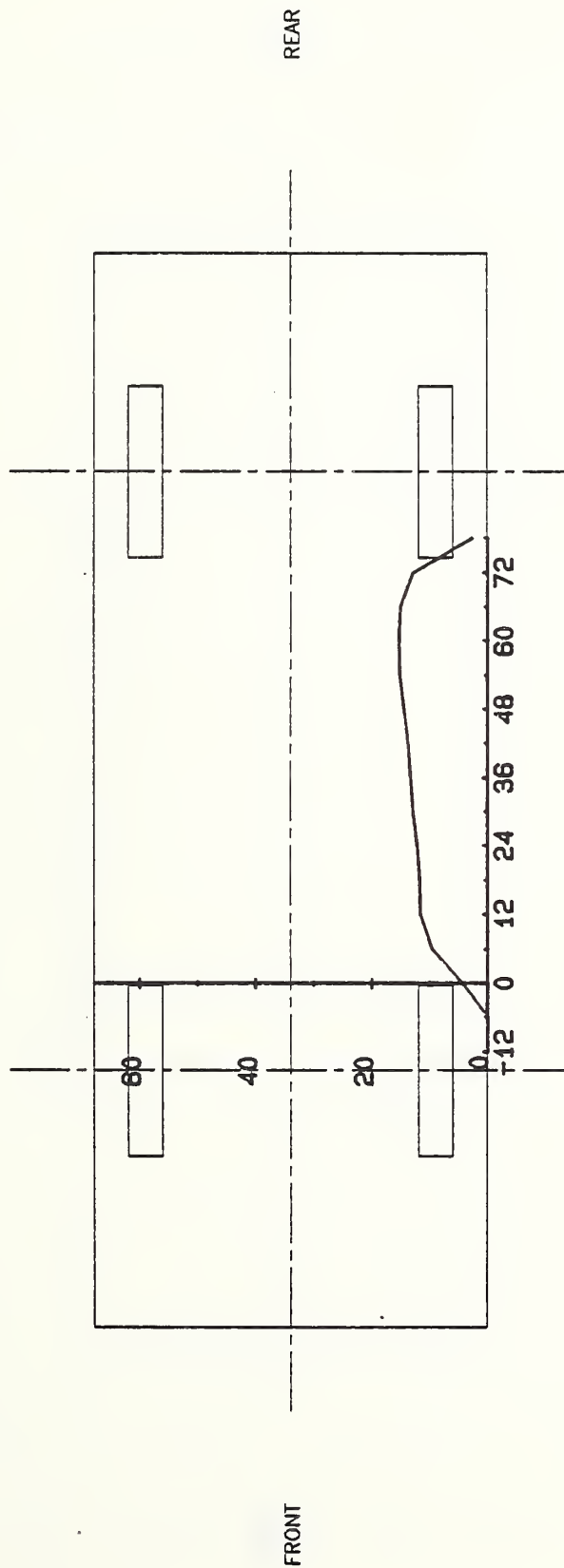
# Not used, the H-point height and mid-door height were within 2 inches.

# VEHICLE EXTERIOR STATIC CRUSH PROFILE



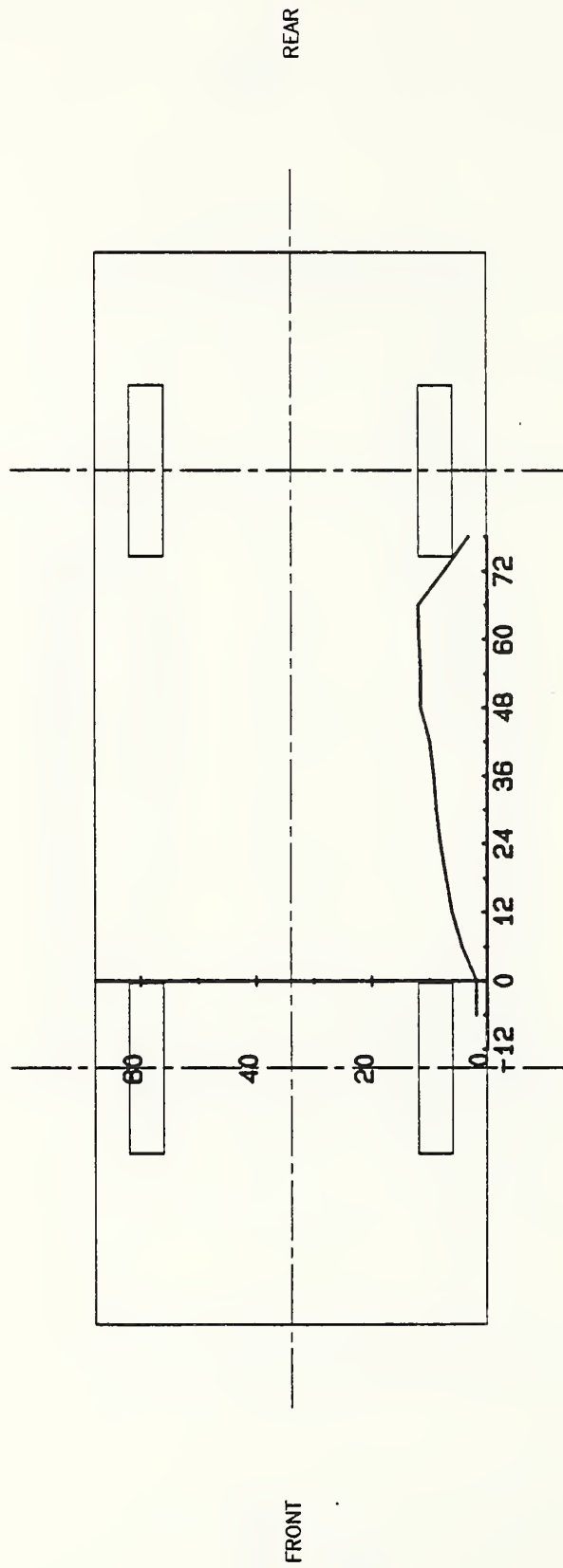
PROFILE LEVEL EQUALS AXLE HEIGHT WHICH IS 11.6" ABOVE GROUND LEVEL  
 (0,0) EQUALS PROJECTED IMPACT POINT  
 SCALE FACTOR EQUALS 0.034

# VEHICLE EXTERIOR STATIC CRUSH PROFILE



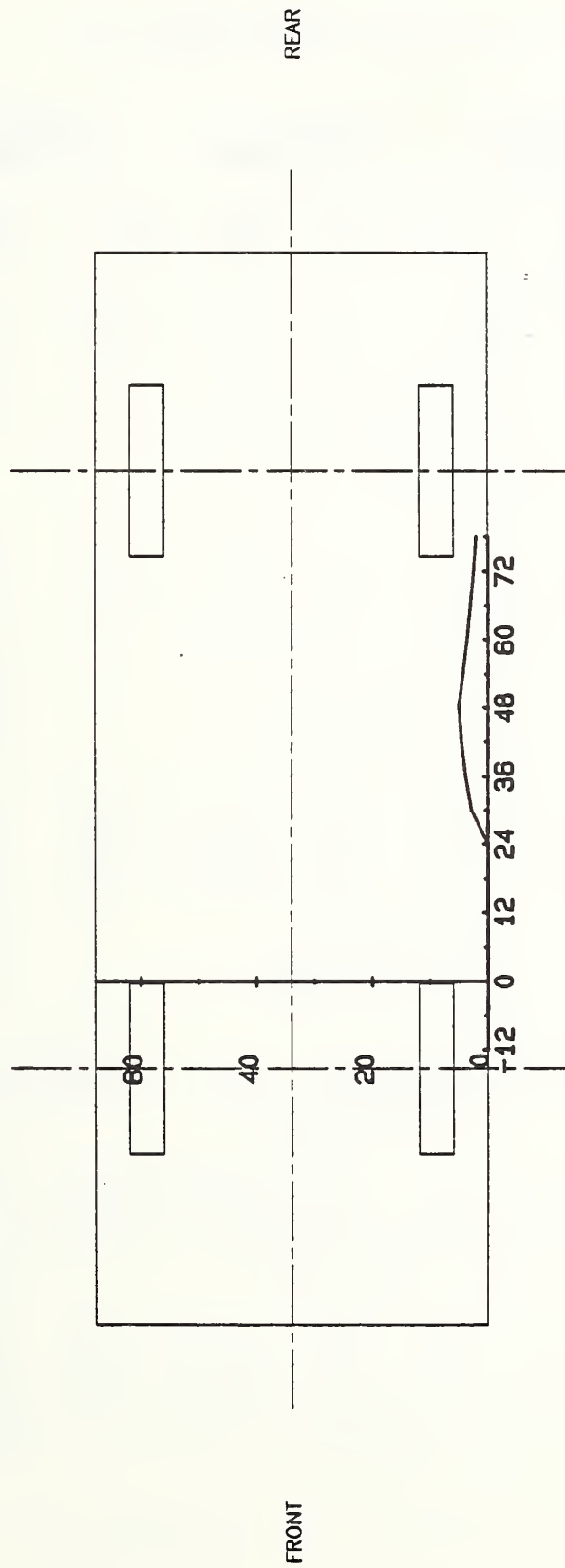
PROFILE LEVEL EQUALS H-POINT HEIGHT WHICH IS 23.6" ABOVE GROUND LEVEL  
 (0,0) EQUALS PROJECTED IMPACT POINT  
 SCALE FACTOR EQUALS 0.034

# VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW SILL HEIGHT WHICH IS 34.9" ABOVE GROUND LEVEL  
 (0,0) EQUALS PROJECTED IMPACT POINT  
 SCALE FACTOR EQUALS 0.034

# VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT WHICH IS 53.3" ABOVE GROUND LEVEL  
 (0,0) EQUALS PROJECTED IMPACT POINT  
 SCALE FACTOR EQUALS 0.034



# SIDE IMPACT DUMMY DATA SUMMARY

	DRIVER DUMMY 119				PASSENGER DUMMY 016			
	POSITIVE		NEGATIVE		POSITIVE		NEGATIVE	
	DIRECTION*		DIRECTION**		DIRECTION*		DIRECTION**	
	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
HEAD ACCELERATION								
LONGITUDINAL	10.11	61.50	14.82	84.75	15.88	63.63	29.19	56.75
LATERAL	56.48	49.00	10.48	35.38	127.96	55.75	19.67	268.88
VERTICAL	27.83	49.88	35.69	62.38	33.49	64.63	13.48	43.38
RESULTANT		59.77 @ 49.00				132.40 @ 55.75		
HIC	162.57 from 48.00 to 79.50 msec				704.76 from 51.88 to 60.38 msec			
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	---	--- Y	---	--- Y	14.58	54.38	33.06	64.38
LATERAL (P)***	68.97	43.75	42.84	73.13	56.70	47.50	29.67	61.87
LATERAL (R)***	72.30	43.75	42.11	73.13	54.67	47.50	31.85	61.87
VERTICAL	7.42	65.00	4.46	85.00	9.60	35.00	17.69	65.00
RESULTANT (P)		---	@ --- Y			58.23 @ 47.50		
RESULTANT (R)		---	@ --- Y			56.25 @ 47.50		
DELTA V (MPH)****		25.1 @ 63.13 (P)				16.6 @ 58.75 (P)		
		26.9 @ 63.75 (R)				14.8 @ 58.75 (R)		
LOWER SPINE								
LONGITUDINAL	24.57	54.38	23.45	73.13	37.90	55.00	25.77	63.13
LATERAL (P)	83.92	40.00	22.91	71.88	78.44	37.50	67.13	63.13 Y
LATERAL (R)	84.27	40.00	22.35	72.50	78.53	37.50	38.23	63.13
VERTICAL	10.60	37.50	3.02	86.25	17.75	40.63	10.38	76.88
RESULTANT (P)		84.95 @ 40.00				80.54 @ 37.50 Y		
RESULTANT (R)		85.30 @ 40.00				80.62 @ 37.50		
DELTA V (MPH)		27.0 @ 55.63 (P)				24.6 @ 52.50 (P) Y		
		27.6 @ 67.50 (R)				27.5 @ 58.13 (R)		
LEFT UPPER RIB								
LATERAL (P)	75.68	36.88	15.41	84.38	110.38	42.50	9.28	48.13
LATERAL (R)	84.50	36.25	14.34	84.38	109.70	42.50	14.72	48.13
DELTA V (MPH)		23.3 @ 76.88 (P)				17.8 @ 47.50 (P)		
		23.0 @ 77.50 (R)				17.5 @ 46.88 (R)		
LEFT LOWER RIB								
LATERAL (P)	68.63	37.50	6.04	65.00	104.57	40.00	49.16	66.25
LATERAL (R)	79.03	37.50	4.09	80.00	110.25	40.00	41.90	66.25
DELTA V (MPH)		21.3 @ 62.50 (P)				21.2 @ 49.38 (P)		
		23.7 @ 63.12 (R)				21.1 @ 49.38 (R)		
PELVIS ACCELERATION								
LONGITUDINAL	12.83	57.88	5.54	49.25	17.25	44.00	28.23	40.25
LATERAL	---	--- Y	---	--- Y	103.22	33.25	7.44	82.75
VERTICAL	26.49	38.50	3.85	88.00	32.37	38.50	13.87	67.88
RESULTANT		---	@ --- Y			104.15 @ 33.25		
DELTA V (MPH)		---	@ --- Y			26.3 @ 73.63		



SIDE IMPACT DUMMY DATA SUMMARY CONTD

	<u>DRIVER DUMMY</u>				<u>PASSENGER DUMMY</u>			
	<u>POSITIVE</u>		<u>NEGATIVE</u>		<u>POSITIVE</u>		<u>NEGATIVE</u>	
	<u>DIRECTION*</u>		<u>DIRECTION**</u>		<u>DIRECTION*</u>		<u>DIRECTION**</u>	
	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>
	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>
RIB DEFLECTION	1.63	106.25	---	--- ε	1.50	64.63	---	--- ε

\* LONGITUDINAL: FORWARD  
 LATERAL: RIGHTWARD  
 VERTICAL: UPWARD

\*\*LONGITUDINAL: REARWARD  
 LATERAL: LEFTWARD  
 VERTICAL: DOWNWARD

\*\*\* (P) = Primary Sensor, (R) = Redundant Sensor

\*\*\*\* For dummy channels, Delta V is the velocity change at the approximate time of separation from the contact area.

Compression: Positive

Y See TEST ANOMALIES

ε No negative values in the time interval of interest

# VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

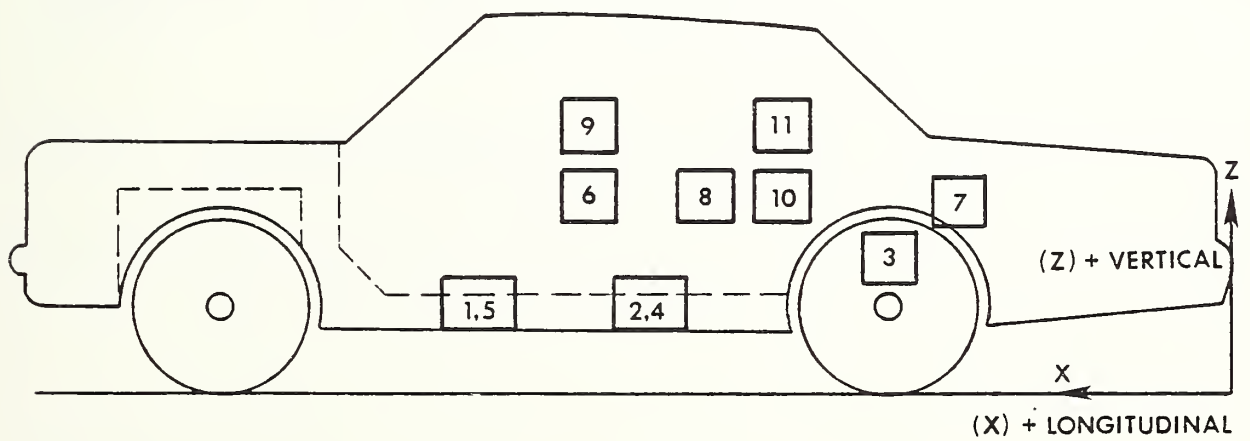
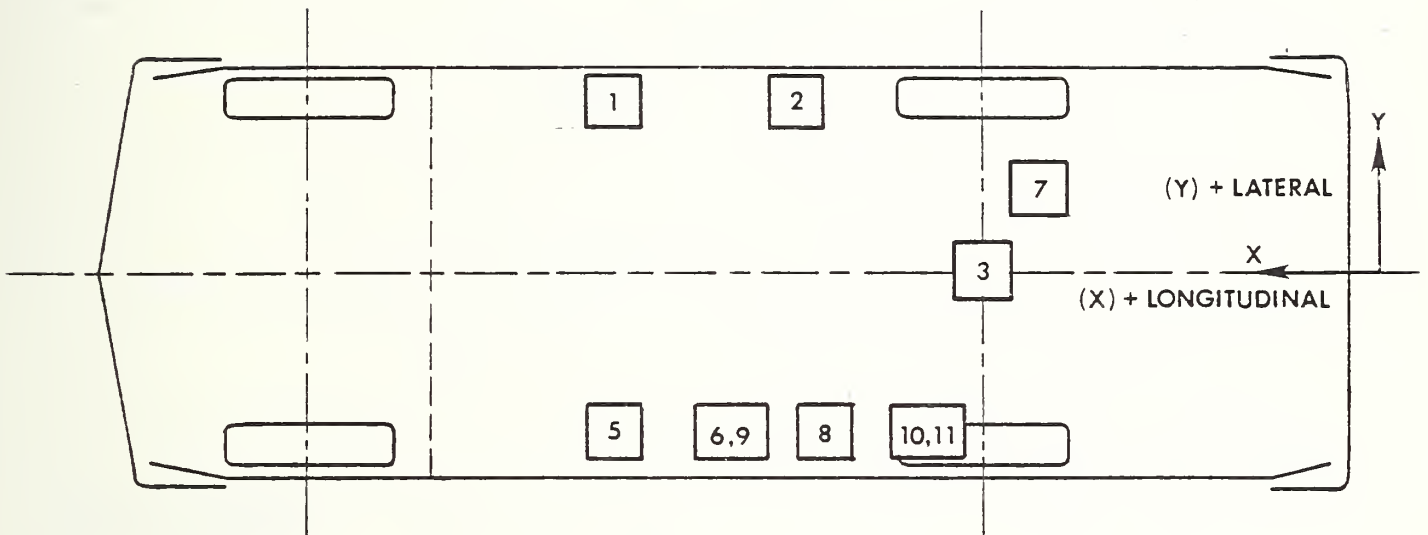
NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT SILL AT FRONT SEAT	112.6	26.5	12.3				
	(LONGITUDINAL)	$\Delta V = -1.2$ mph @ 127.38 msec			3.19	41.88	8.19	24.00
	(LATERAL)	$\Delta V = 13.4$ mph @ 127.38 msec			22.93	29.25	4.38	90.88
	(VERTICAL)				5.74	23.88	6.03	31.38
	(RESULTANT)					23.59 @ 29.38		
2	RIGHT SILL AT REAR SEAT	97.5	26.5	12.3				
	(LONGITUDINAL)	$\Delta V = ---$ mph @ --- msec			2.15	17.63Y	7.24	23.63Y
	(LATERAL)	$\Delta V = 19.7$ mph @ 127.38 msec			32.61	28.50	2.47	35.38
	(VERTICAL)				4.35	37.00	7.67	56.00
	(RESULTANT)					32.79 @ 28.50Y		
3	REAR DECK OVER AXLE	44.3	0.0	18.3				
	(LONGITUDINAL)	$\Delta V = -2.0$ mph @ 127.38 msec			2.08	149.13	4.96	83.75
	(LATERAL)	$\Delta V = 18.7$ mph @ 127.38 msec			17.08	41.63	2.41	204.88
	(VERTICAL)				---	--- Y	---	--- Y
	(RESULTANT)					--- @ --- Y		
4	LEFT SILL AT REAR SEAT	99.1	-26.4	11.0				
	(LATERAL)	$\Delta V = 15.7$ mph @ 31.25 msec			91.49	10.00	17.47	23.13
5	LEFT SILL AT FRONT SEAT	112.1	-26.6	12.0				
	(LATERAL)	$\Delta V = 15.5$ mph @ 20.88 msec			82.37	9.00	10.20	59.38
6	LEFT FRONT DOOR CENTERLINE	108.3	-27.9	20.1				
	(LATERAL)	$\Delta V = 24.3$ mph @ 15.00 msec			181.02	12.50	79.06	30.50
7	RIGHT TRUNK FLOOR	36.8	16.4	17.4				
	(LONGITUDINAL)				8.39	55.38Y	19.16	49.25Y
8	MIDREAR OF LEFT FRONT DOOR	102.3	-28.4	23.6				
	(LATERAL)	$\Delta V = 25.1$ mph @ 17.88 msec			166.70	13.50	86.20	28.38
9	UPPER LEFT FRONT DOOR CENTERLINE	108.3	-28.2	31.6				
	(LATERAL)	$\Delta V = 18.9$ mph @ 16.63 msec			124.47	14.50	29.79	33.75
10	UPPER LEFT REAR DOOR	69.5	28.9	18.8				
	(LATERAL)	$\Delta V = 27.3$ mph @ 22.75 msec			181.15	15.00	211.07	28.88
11	MID LOWER LEFT REAR DOOR	69.5	-29.0	29.7				
	(LATERAL)	$\Delta V = 22.6$ @ 14.36 msec			104.16	15.63	80.59	28.75

\* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right),  
Z - Ground Level (+ Up)

All measurements of accelerometer locations in inches.

Y See TEST ANOMALIES

# VEHICLE ACCELEROMETER LOCATIONS



# YAW RATE GYRO LOCATION AND DATA SUMMARY

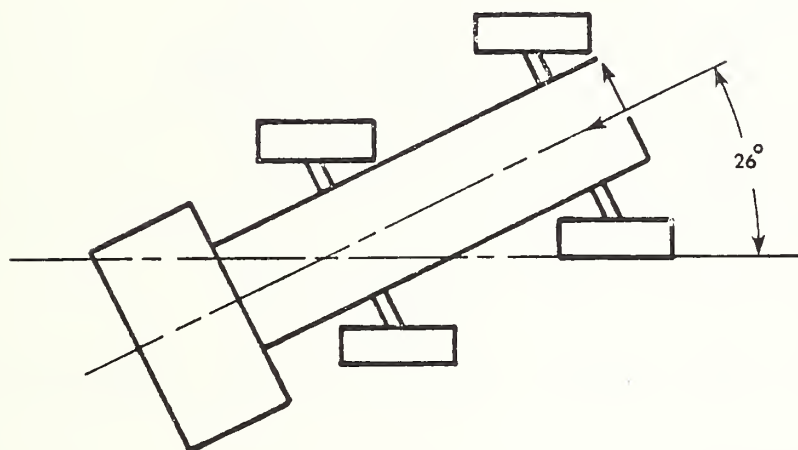
LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
				MAX (deg/sec)	TIME (msec)	MAX (deg/sec)	TIME (msec)
YAW RATE GYRO	120.8	0.8	19.0	65.46	30.88	69.13	46.50

\*Reference: X - Rear Bumper (+ forward), Y - Vehicle Centerline (+ to right),  
Z - Ground Level (+ up)

All measurements of rate gyro in inches.

Yaw rotation is positive when measured counterclockwise as viewed from above.

# MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY



NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	CENTER OF GRAVITY	73.5	0.0	12.8				
	(LONGITUDINAL)	$\Delta V = -17.6 \text{ mph @ } 127.38 \text{ msec}$			---	---	14.92	48.13
	(LATERAL)	$\Delta V = -4.4 \text{ mph @ } 127.38 \text{ msec}$			1.38	156.63	7.46	40.75
	(VERTICAL)				4.20	35.00	5.33	45.38
	(RESULTANT)					16.45 @	45.13	
2	REAR FRAME MEMBER	19.4	-18.5	12.7				
	(LONGITUDINAL)	$\Delta V = -18.4 \text{ mph @ } 127.38 \text{ msec}$			1.94	170.63	16.36	38.38
	(LATERAL)	$\Delta V = +1.4 \text{ mph @ } 127.38 \text{ msec}$			3.88	34.13	1.89	106.75

\* Reference: X - Rear Most Point of Frame (+ To Forward), Y - Barrier Centerline (+ To Right), Z - Ground Level (+ To Up)

All measurements of accelerometer locations in inches.

x No positive value in time interval of interest.

# CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Onboard MDB - Tight	Photosonic 1B	25	495	Closeup of impact point
2	Onboard MDB - Wide	Photosonic 1B	13	500	Dummy Kinematics
3	Overhead - Tight	Photosonic 1B	25	500	Closeup of impact point
4	Overhead - Wide	Photosonic 1B	8	498	Vehicle dynamics
5	Ground Level - Right	Photosonic 1B	25	502	Overall view
6	Ground Level - Left	Photosonic 1B	17	501	Overall view
7	Onboard Windshield	Photosonic 1B	8	733	Driver Kinematics - front view
8	Onboard Roof	Photosonic 1B	8	802	Door/Driver contact velocity
9	Onboard Driver	Photosonic 1B	8	670	Driver kinematics
10	Onboard Passenger	Photosonic 1B	8	813	Passenger kinematics

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	0	25'
2	0	0	25'
5	24'10"	58'8"	45"
6	-20'11"	-13'	45"

-----  
Origin of Coordinate System is Point of Impact

+X = Forward with Respect to Striking Vehicle's Velocity Vector  
+Y = Rightward with Respect to Striking Vehicle's Velocity Vector  
+Z = Upward with Respect to Striking Vehicle's Velocity Vector



NON-GOVERNMENT FURNISHED TRANSDUCER INFORMATION

PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NUMBER	SERIAL NUMBER	MFG.	DATE OF LAST CALIBRATION	SENSITIVITY	DESIRED FULL SCALE (ENGR. UNITS)
BCGXG	Accel	4-202-0001	18235	Bell Howell	8/25/85	.2395	50 G
BCGYG	Accel	4-202-0001	18835	Bell Howell	8/23/85	.2324	50 G
BCGZG	Accel	4-202-0001	18236	Bell Howell	6/12/85	.239	50 G
BFCXG	Accel	4-202-0001	19022	Bell Howell	6/12/85	.222	50 G
BRCXG	Accel	4-202-0001	18237	Bell Howell	6/12/85	.218	50 G

All dummy and struck vehicle accelerometers were Government Furnished Equipment and were Endevco 2264 Accelerometers.



APPENDIX A  
PHOTOGRAPHS

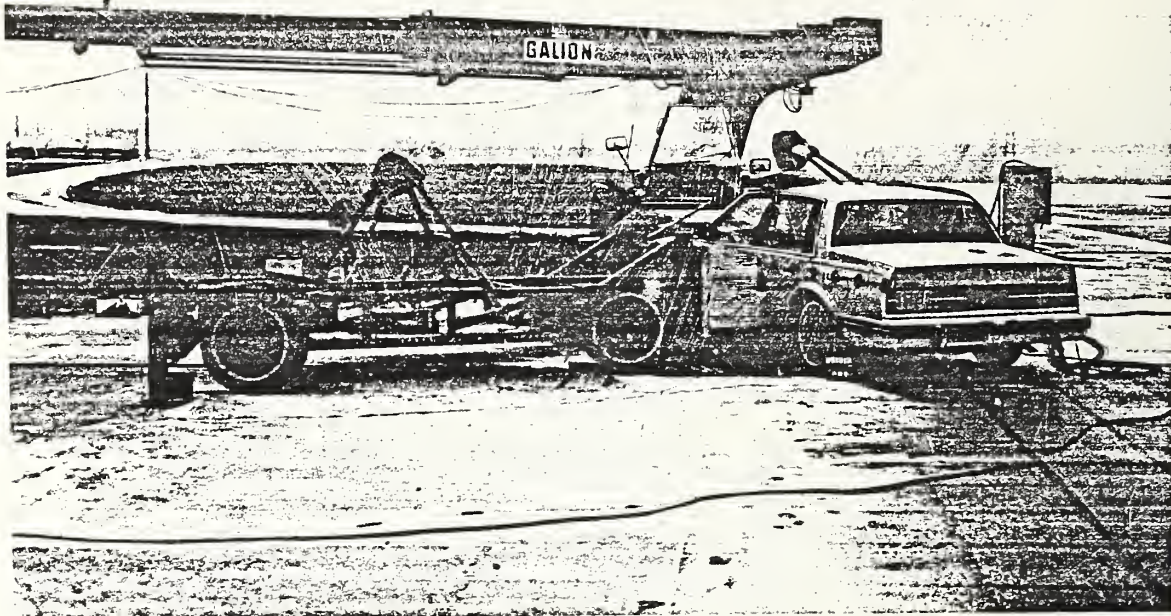


Figure A-1. PRE-TEST OVERALL - VIEW 1



Figure A-2. PRE-TEST OVERALL - VIEW 2  
A-2



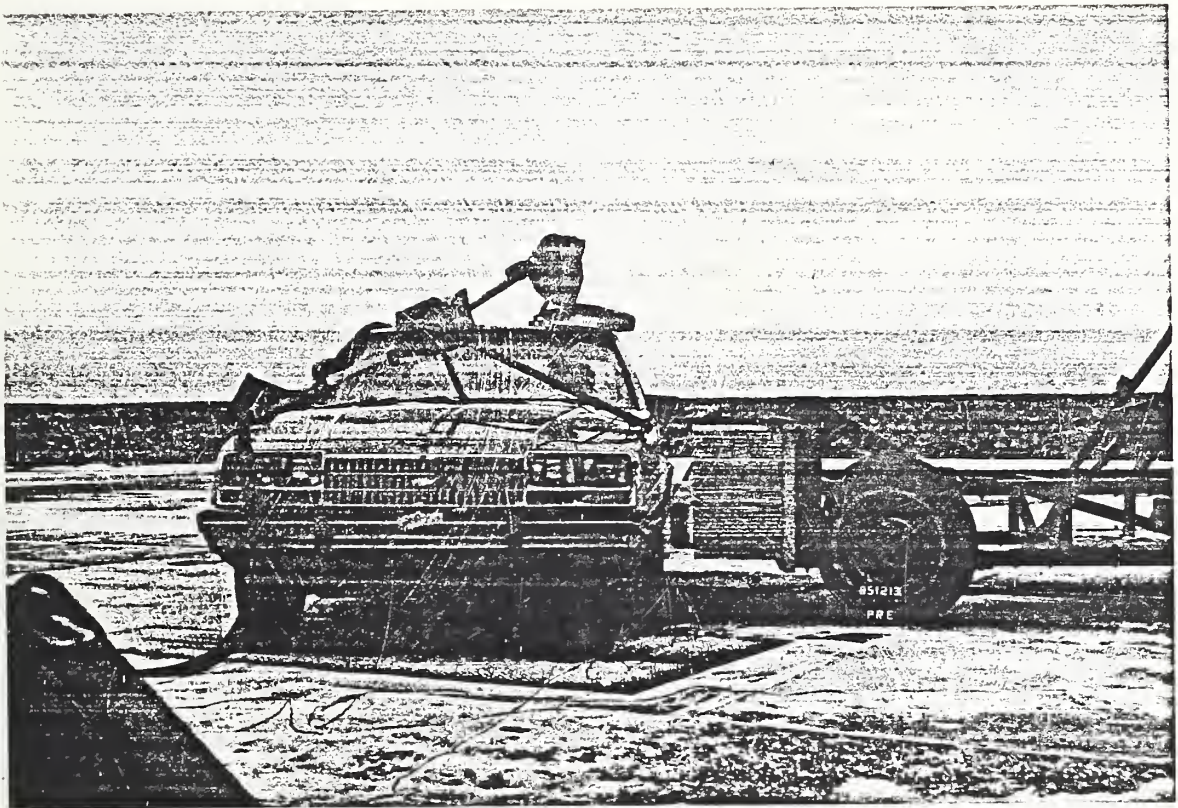


Figure A-3. PRE-TEST OVERALL - VIEW 3

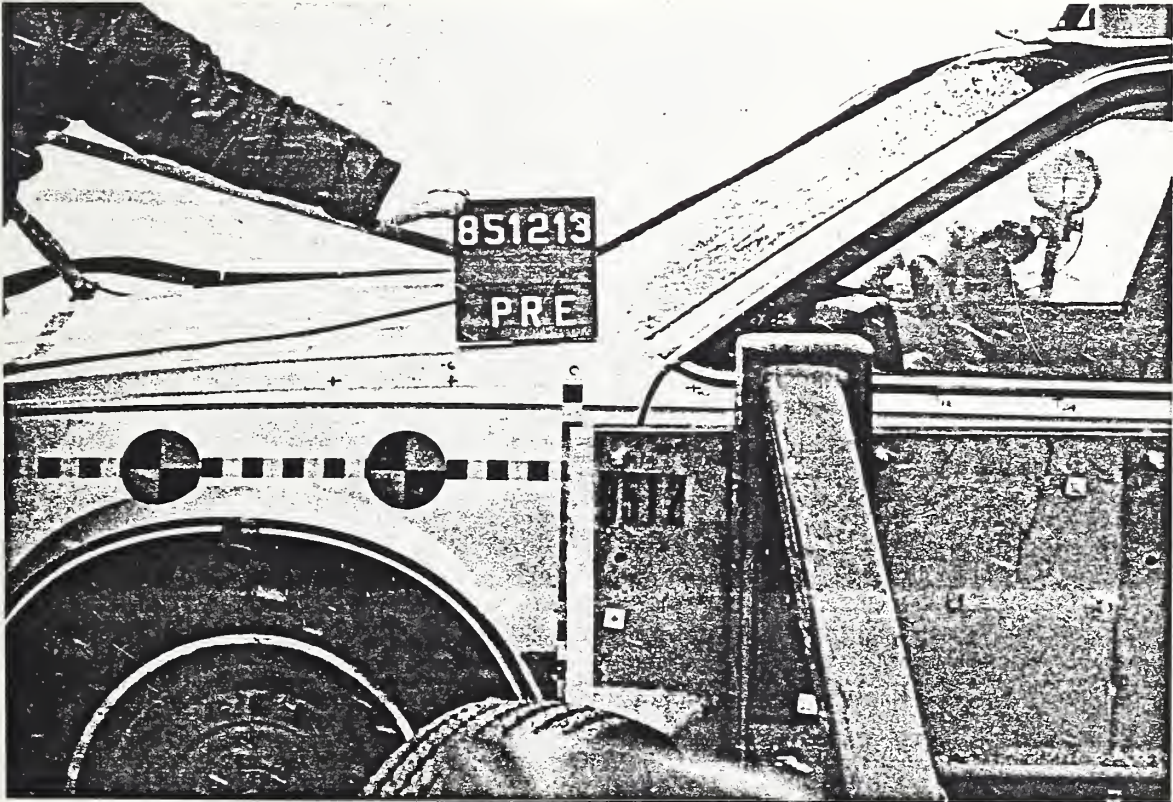


Figure A-4. PRE-TEST CLOSEUP - VIEW 1  
A-3





Figure A-5. PRE-TEST DRIVER DUMMY VIEW



Figure A-6. PRE-TEST PASSENGER DUMMY VIEW





Figure A-7. POST-TEST OVERALL - VIEW 1

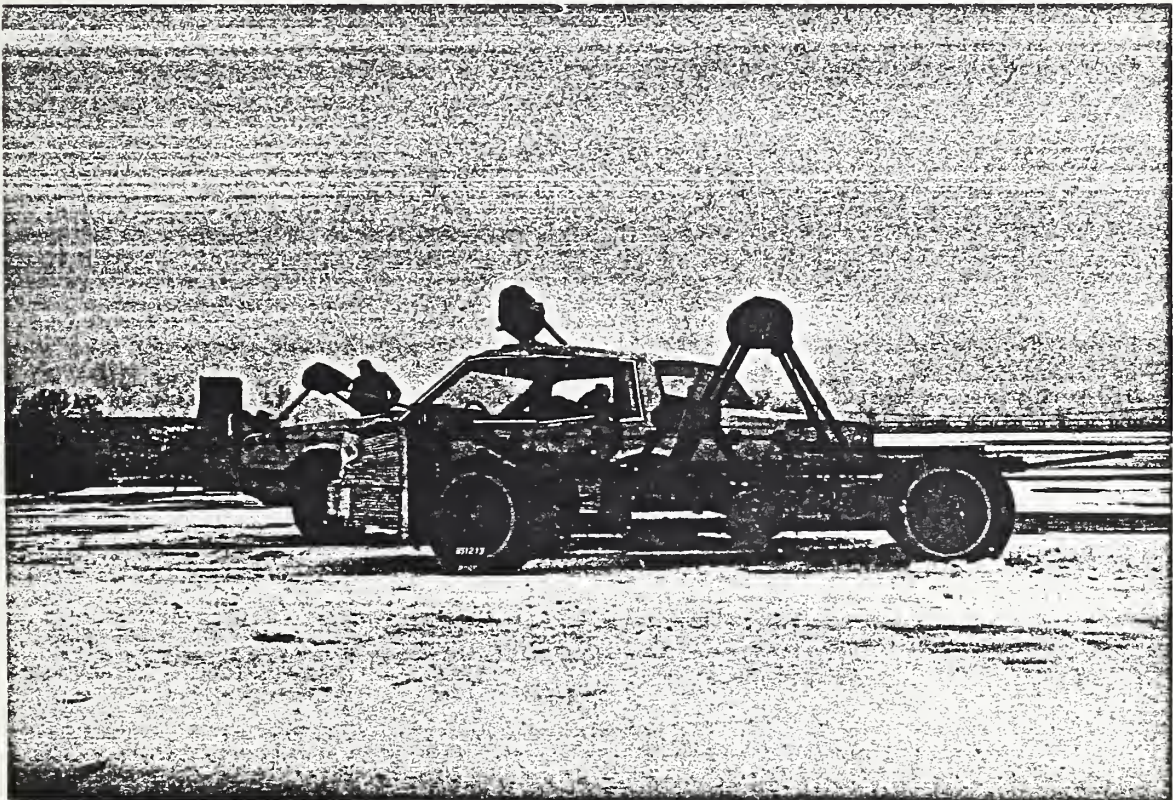


Figure A-8. POST-TEST OVERALL - VIEW 2  
A-5





Figure A-9. POST-TEST OVERALL - VIEW 3



Figure A-10. POST-TEST OVERALL - VIEW 4  
A-6



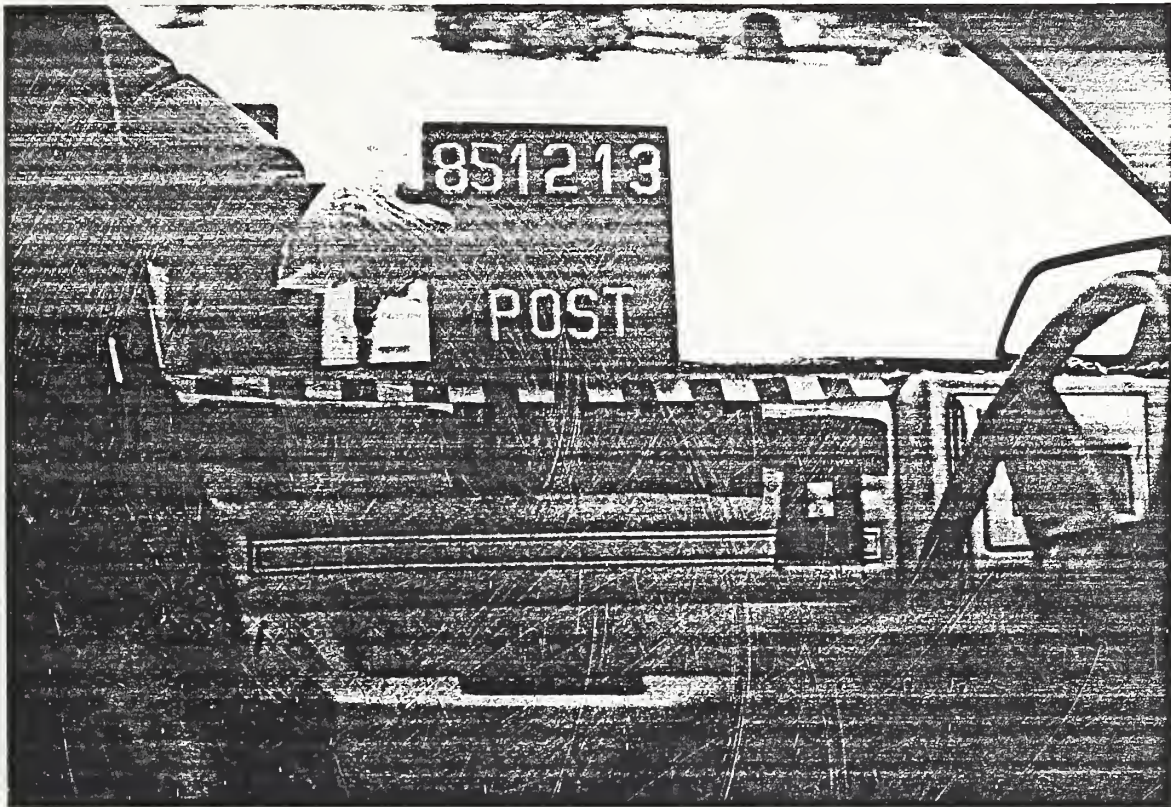


Figure A-11. POST-TEST FRONT DRIVER'S DOOR



Figure A-12. POST-TEST DRIVER DUMMY - VIEW 1  
A-7





Figure A-13. POST-TEST DRIVER DUMMY - VIEW 2



Figure A-14. POST-TEST PASSENGER DUMMY VIEW  
A-8



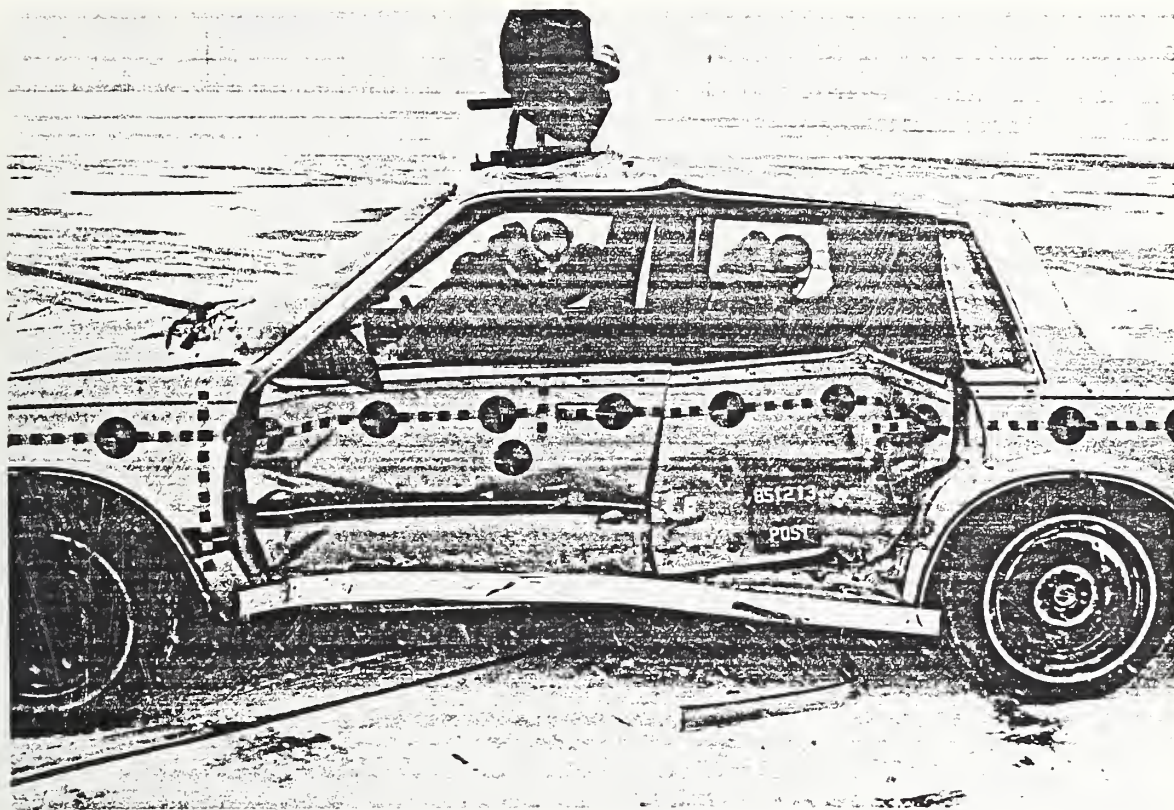


Figure A-15. POST-TEST VEHICLE DAMAGE VIEW

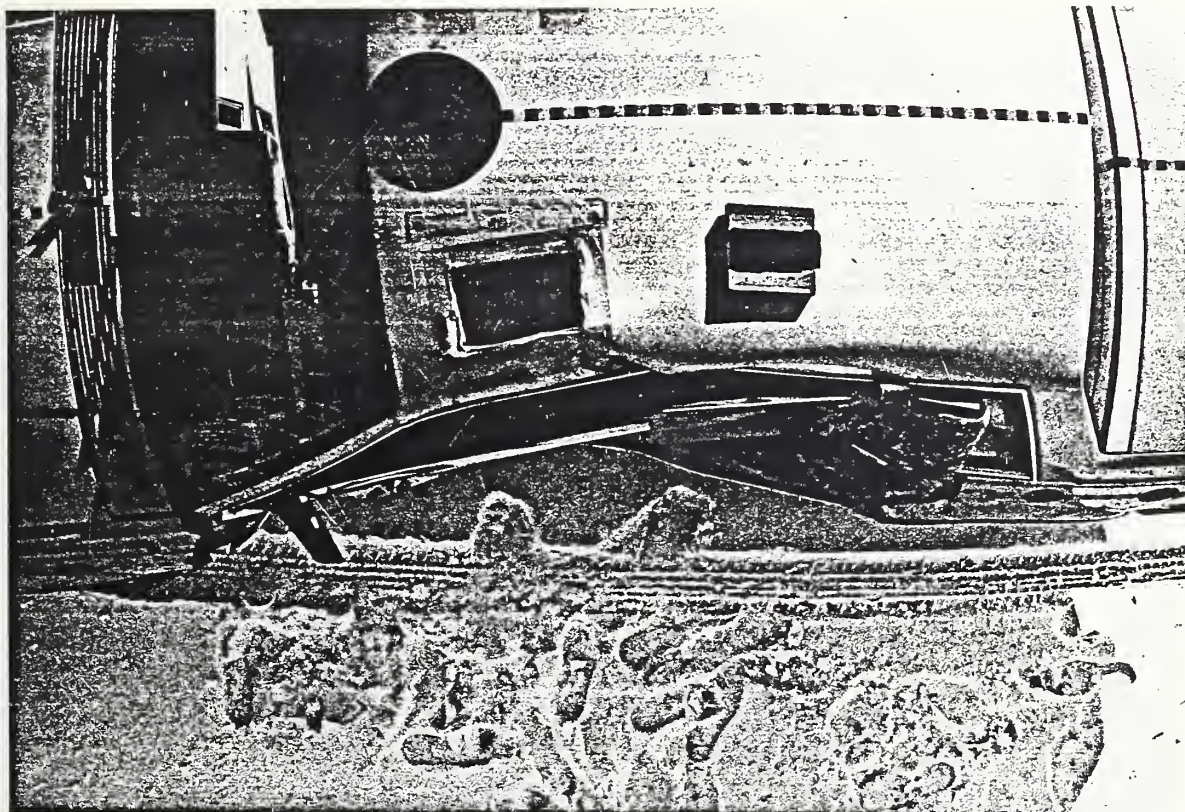


Figure A-16. POST-TEST OVERHEAD VIEW  
A-9



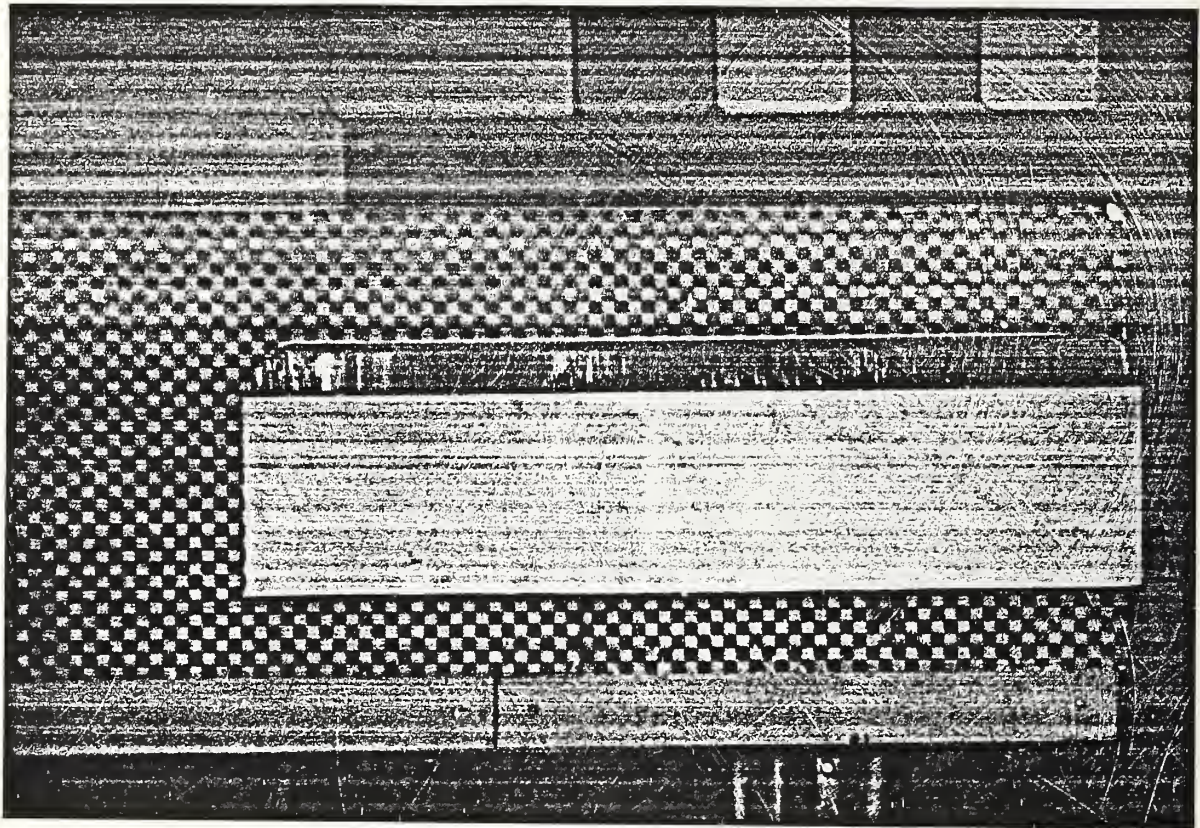


Figure A-17. PRE-TEST MDB FACE - VIEW 1

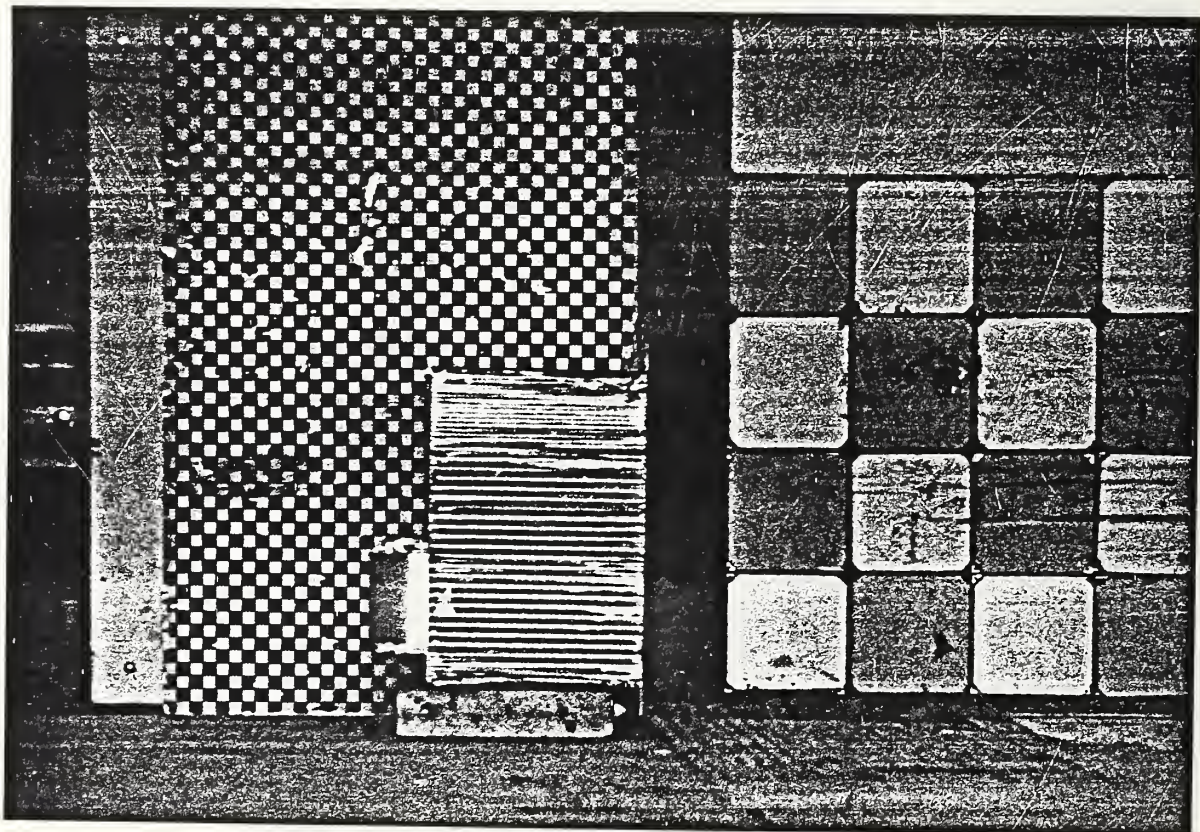


Figure A-18. PRE-TEST MDB FACE - VIEW 2  
A-10



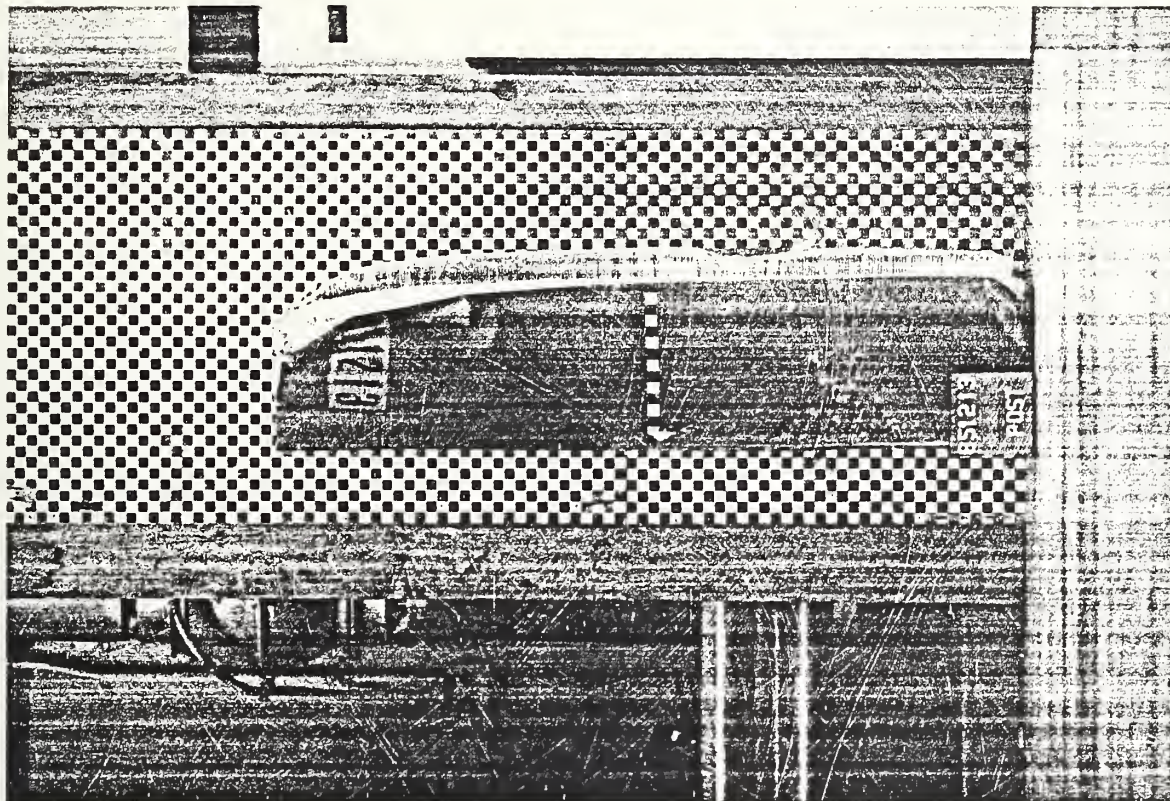


Figure A-19. POST-TEST MDB FACE - VIEW 1

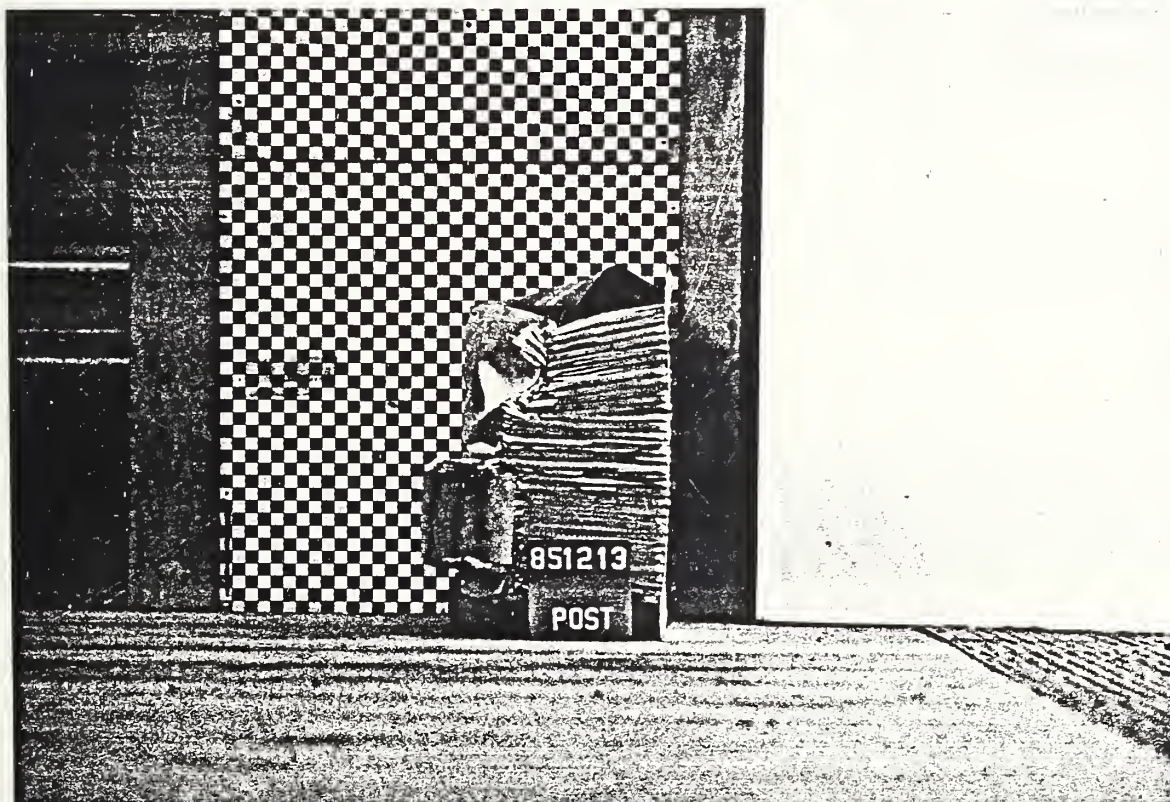


Figure A-20. POST-TEST MDB FACE - VIEW 2  
A-11



## APPENDIX B

### DATA PLOT PRESENTATION

Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data were filtered according to SAE J211, except that dummy thorax data were filtered using the HSRI filter.



VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 HEDXG1

PLOT DATE 18-DEC-85 14:35:44

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -14.82e 84.75, 10.11 e 61.50

100.00

75.00

50.00

25.00

0.00

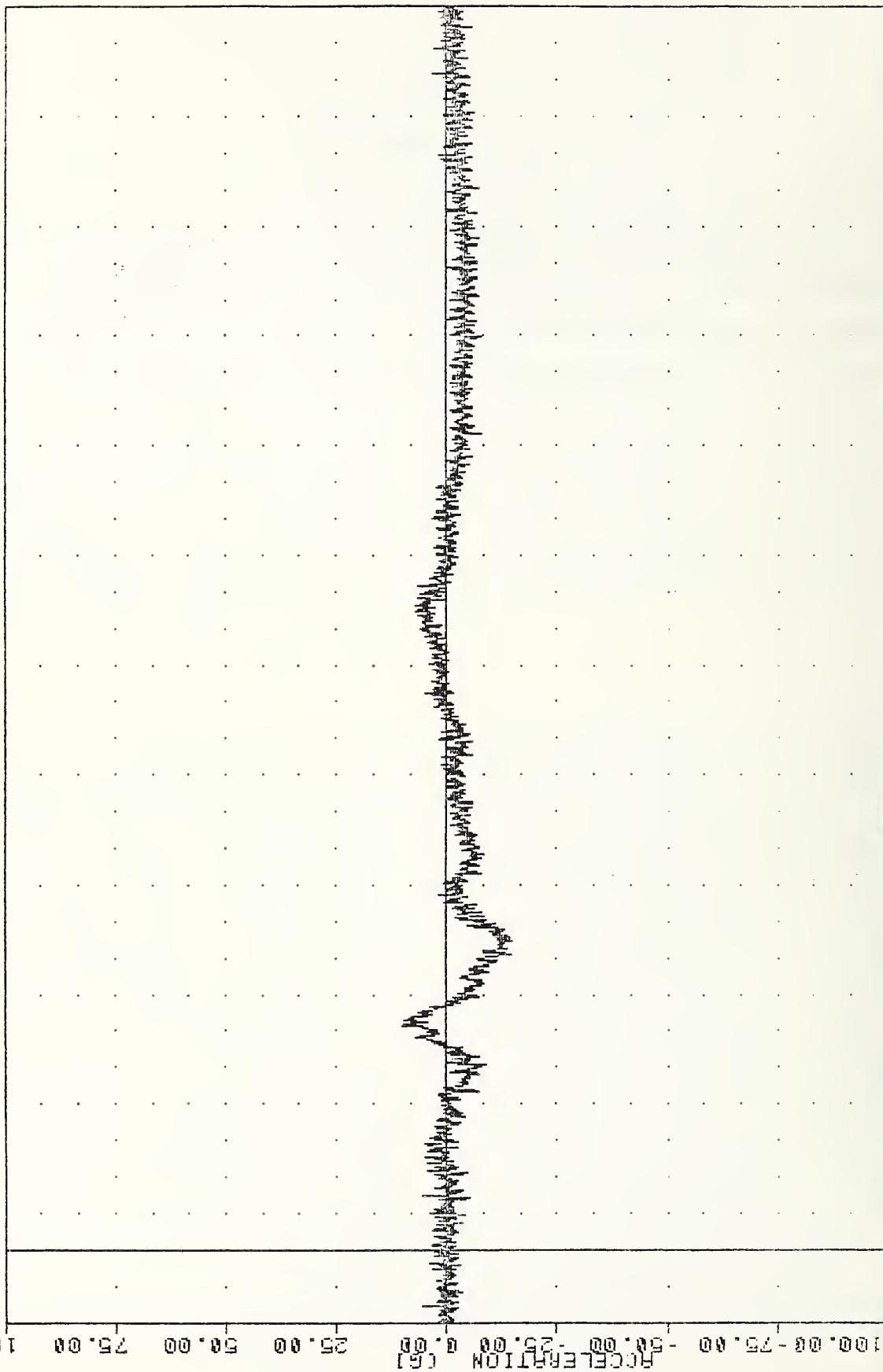
-25.00

-50.00

-75.00

-100.00

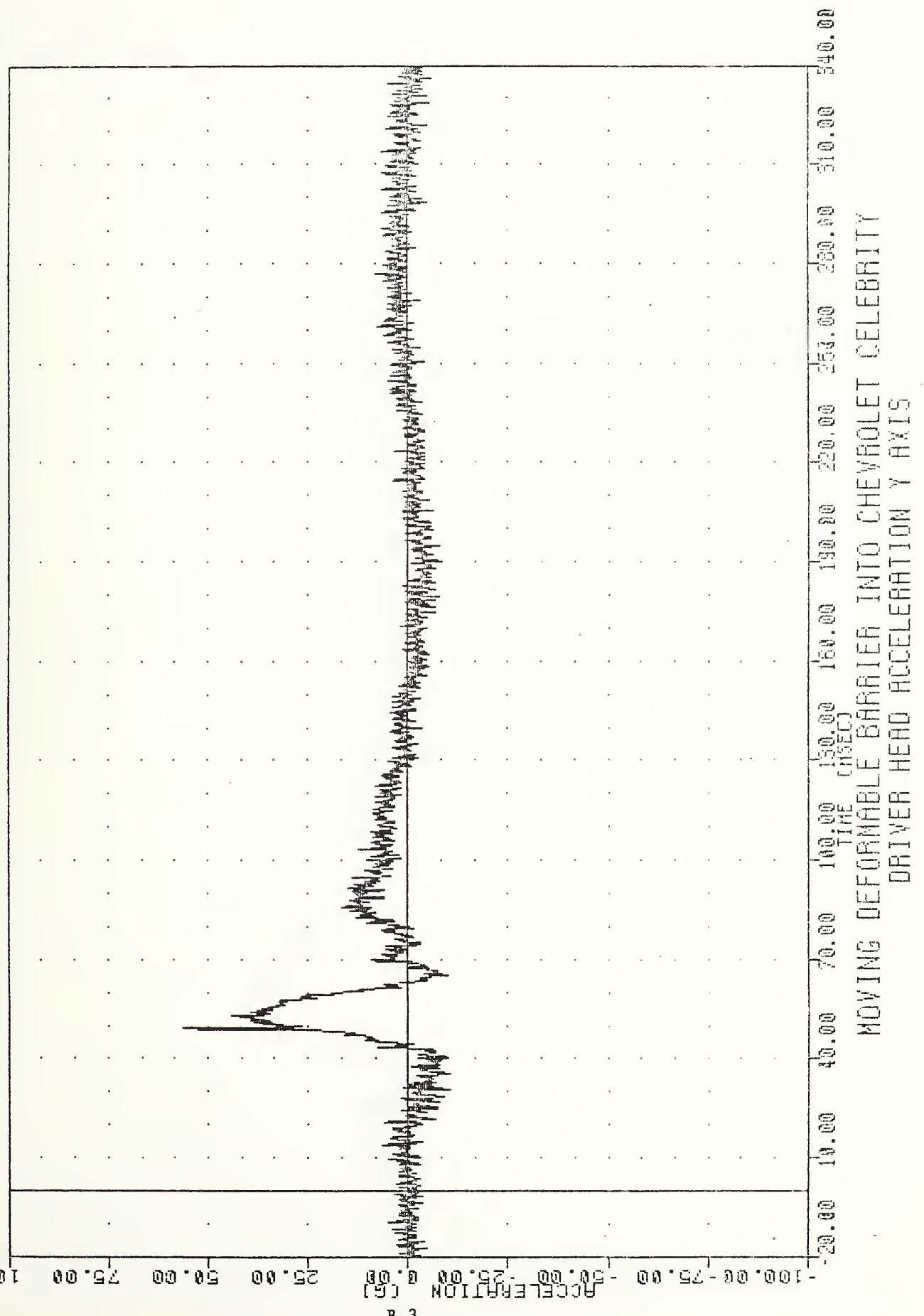
B-2



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
 TIME (msec)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER HEAD ACCELERATION X AXIS

VRT 851213  
 SI PROTECTION PASS VEHICLE  
 85347000000  
 HEDYGI  
 PLOT DATE 18-DEC-85 14:35:44  
 FILTER = ALPF 165N/ 5217/ -40  
 MIN. MAX VALUES = -10.48e 35.36, 56.48 e 49.00

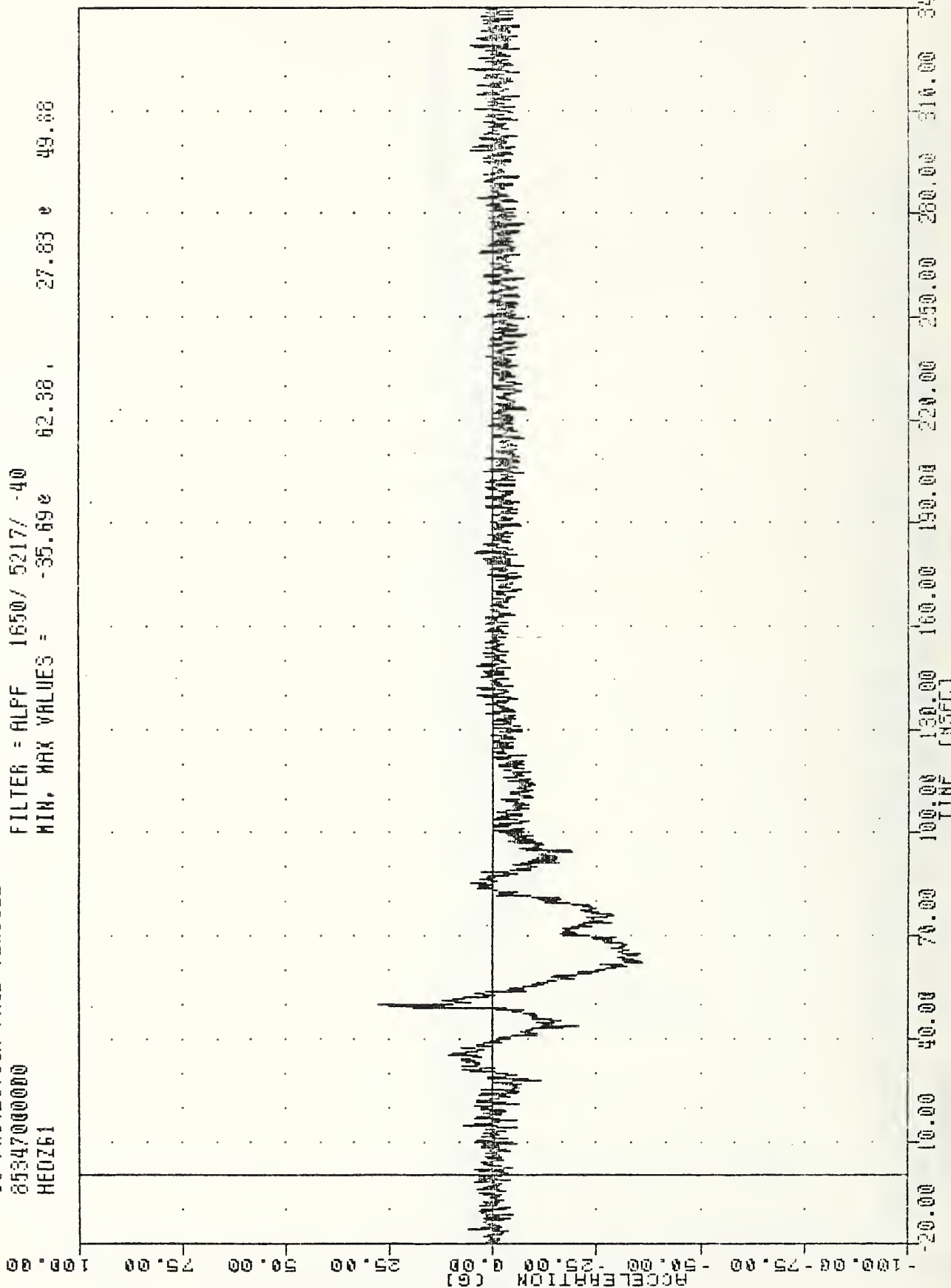


VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 HEDZ61

PLOT DATE 18-DEC-85 14:35:44

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -35.69e 62.38 , 27.83 e 49.88



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER HEAD ACCELERATION Z AXIS



PLOT DATE 18-DEC-85 14:35:44

VAT 851213

SI PROTECTION PROD VEHICLE

85347000000

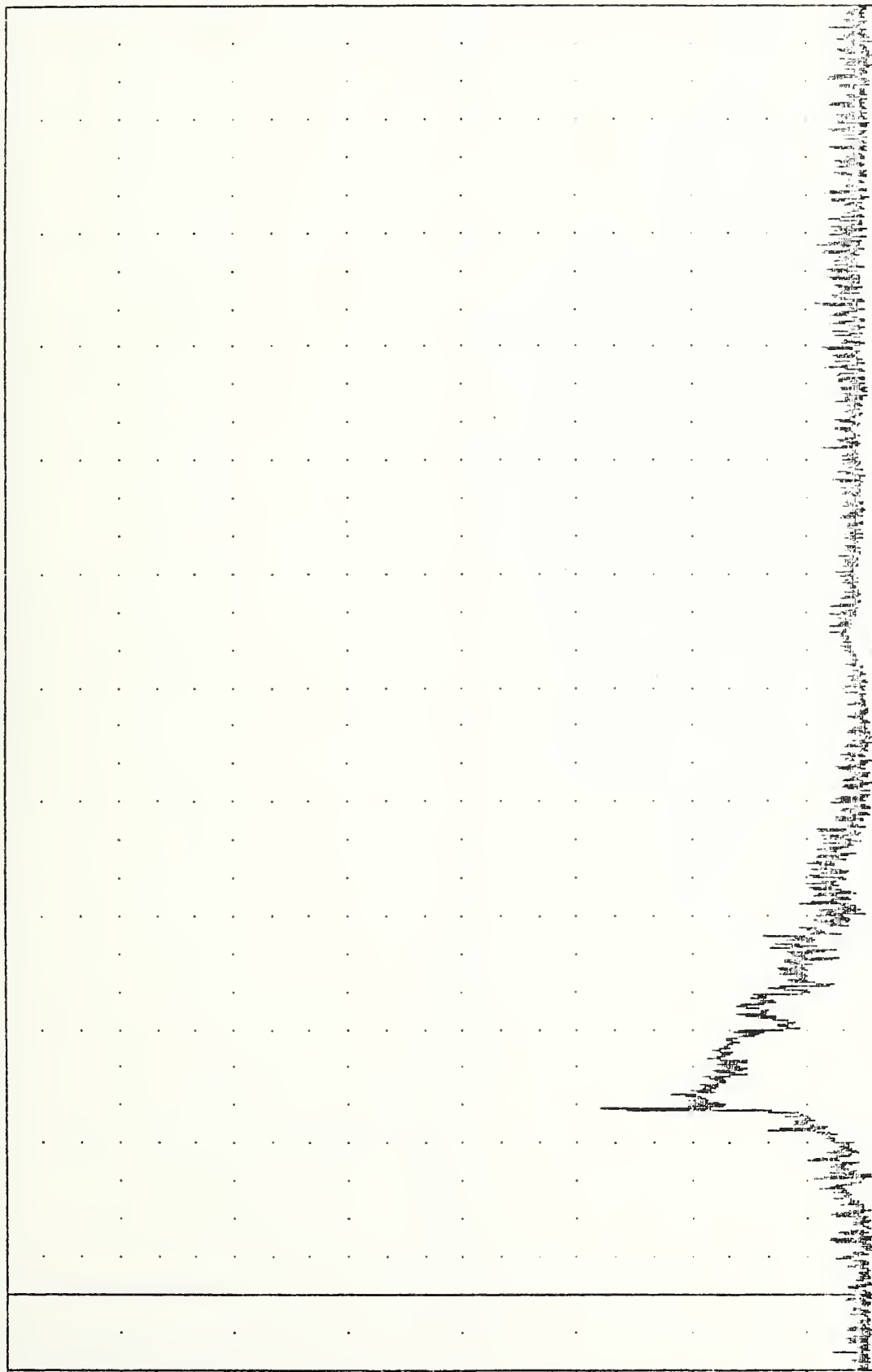
HEADG1

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = 0.420 327.13, 59.77 0 49.00

ACCELERATION (G)

B-5



20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

TIME (MSEC)

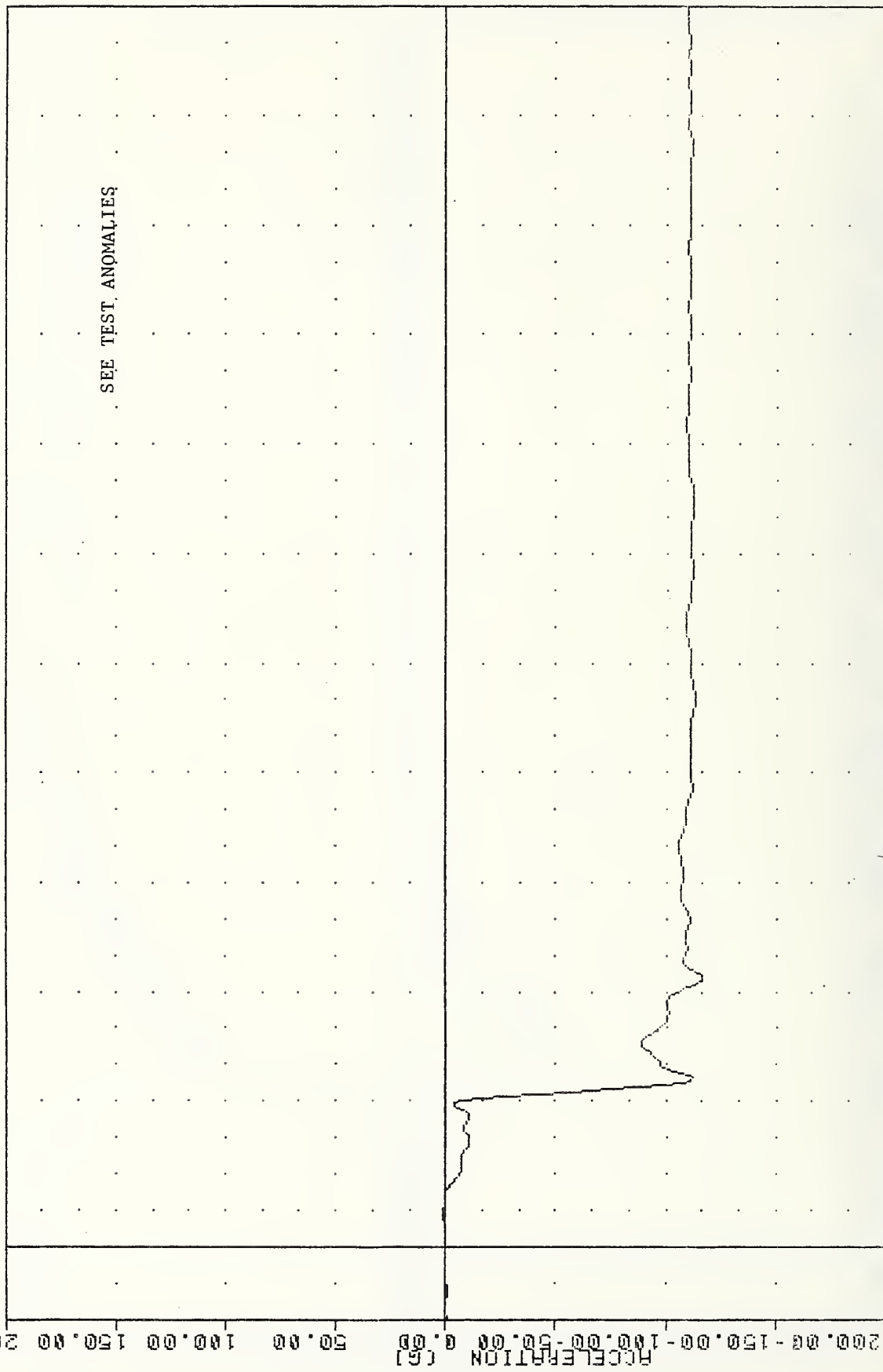
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

DRIVER HEAD RESULTANT

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01X61

PLOT DATE 18-DEC-85 14:36:47  
 FILTER = HSRI 136/ 189/ -50  
 MIN, MAX VALUES = -116.44 73.75 , 1.08 8.75

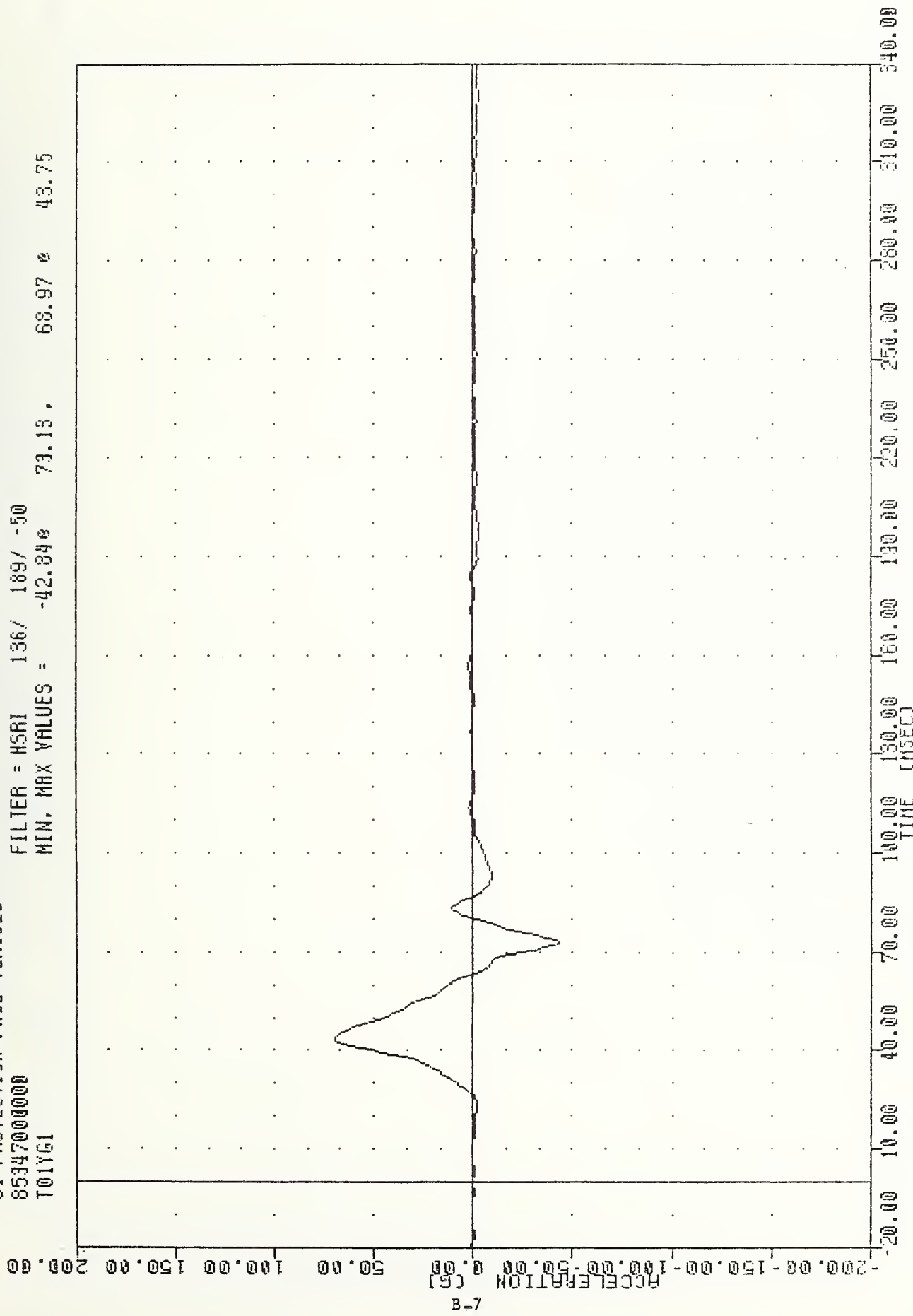
200.00



-200.00 150.00 100.00 50.00 0.00 -50.00 -100.00 -150.00 -200.00  
 TIME (MSEC) 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER UPPER SPINE ACCELERATION X AXIS

VRT 651213  
 SI PROTECTION PROD VEHICLE  
 65347000000  
 T01Y61  
 PLOT DATE 18-DEC-85 14:36:47  
 FILTER = HSRI 136/ 189/ -50  
 MIN, MAX VALUES = -42.848 73.13, 68.97 43.75



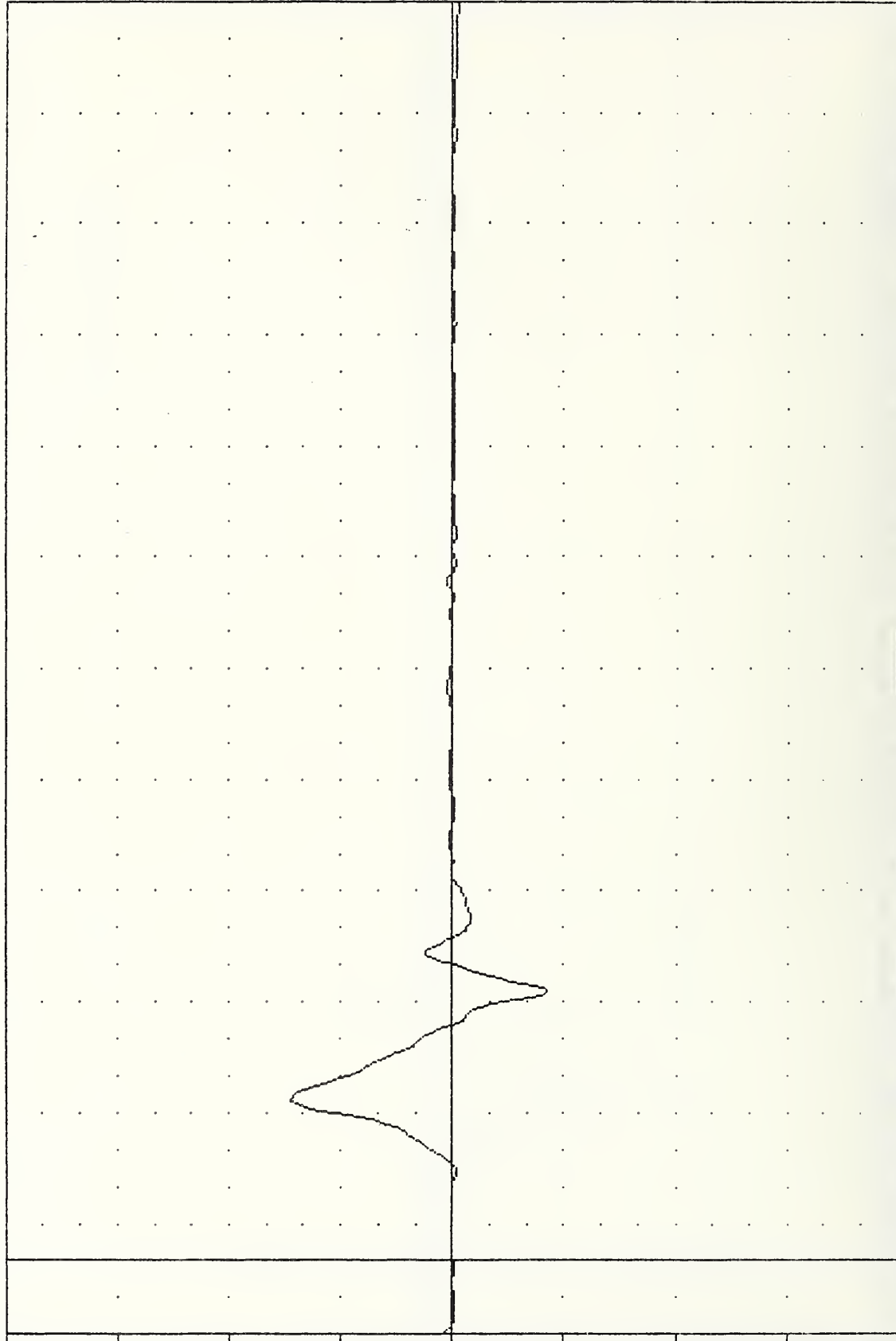
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER UPPER SPINE ACCELERATION Y AXIS

WAT , 851213  
SI PROTECTION PROD VEHICLE  
65347000000  
T0176R

PLOT DATE 13-DEC-85 14:36:47

FILTER = HSAI 136/ 189/ -50  
MIN. MAX VALUES = -42.11 73.13 72.30 43.75

B-8  
ACCELERATION (G)  
TIME (MSEC)



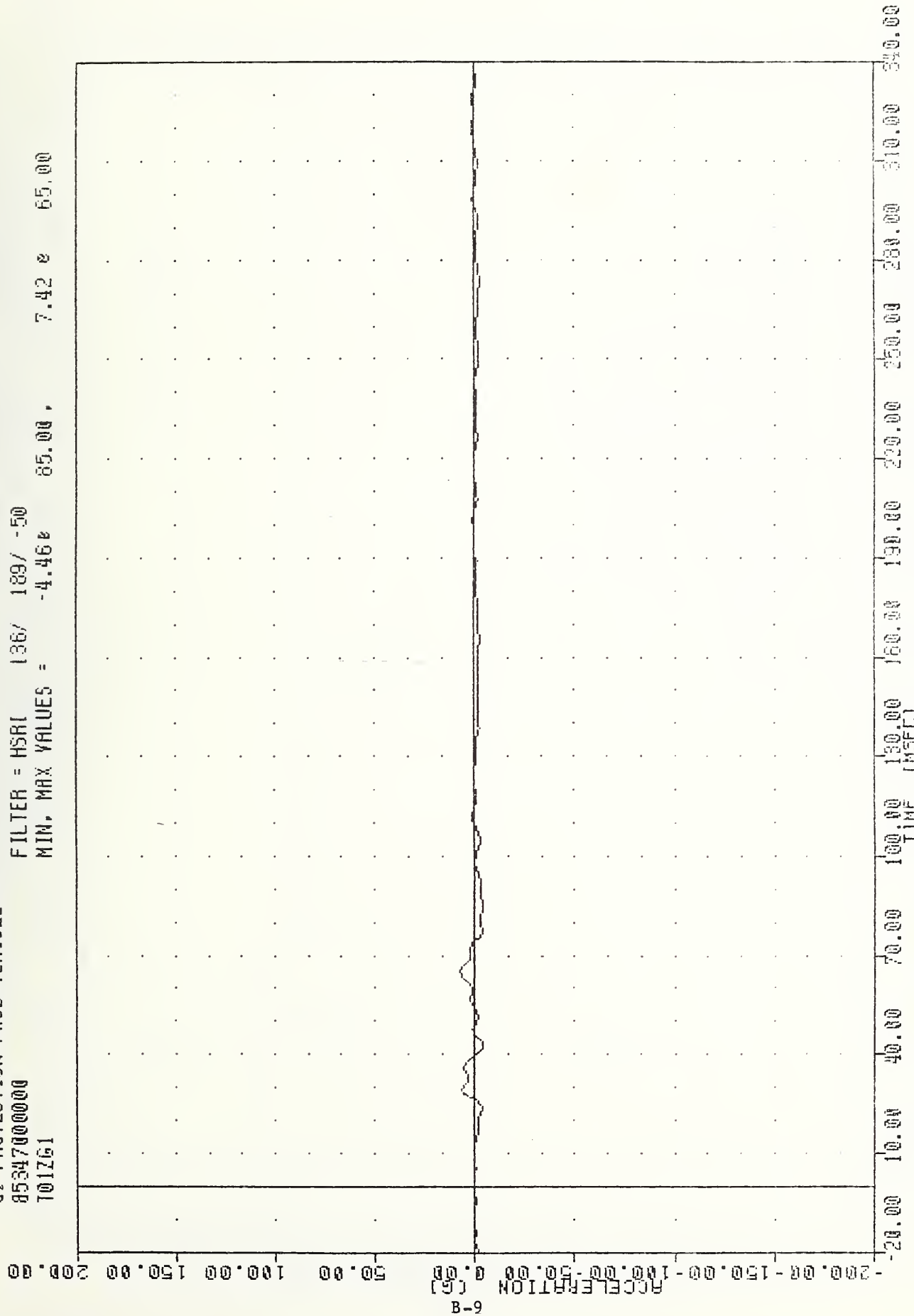
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
DRIVER UPPER SPINE ACCELERATION -2 Y AXIS

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 701261

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -4.46e 85.00 , 7.42 e 65.00



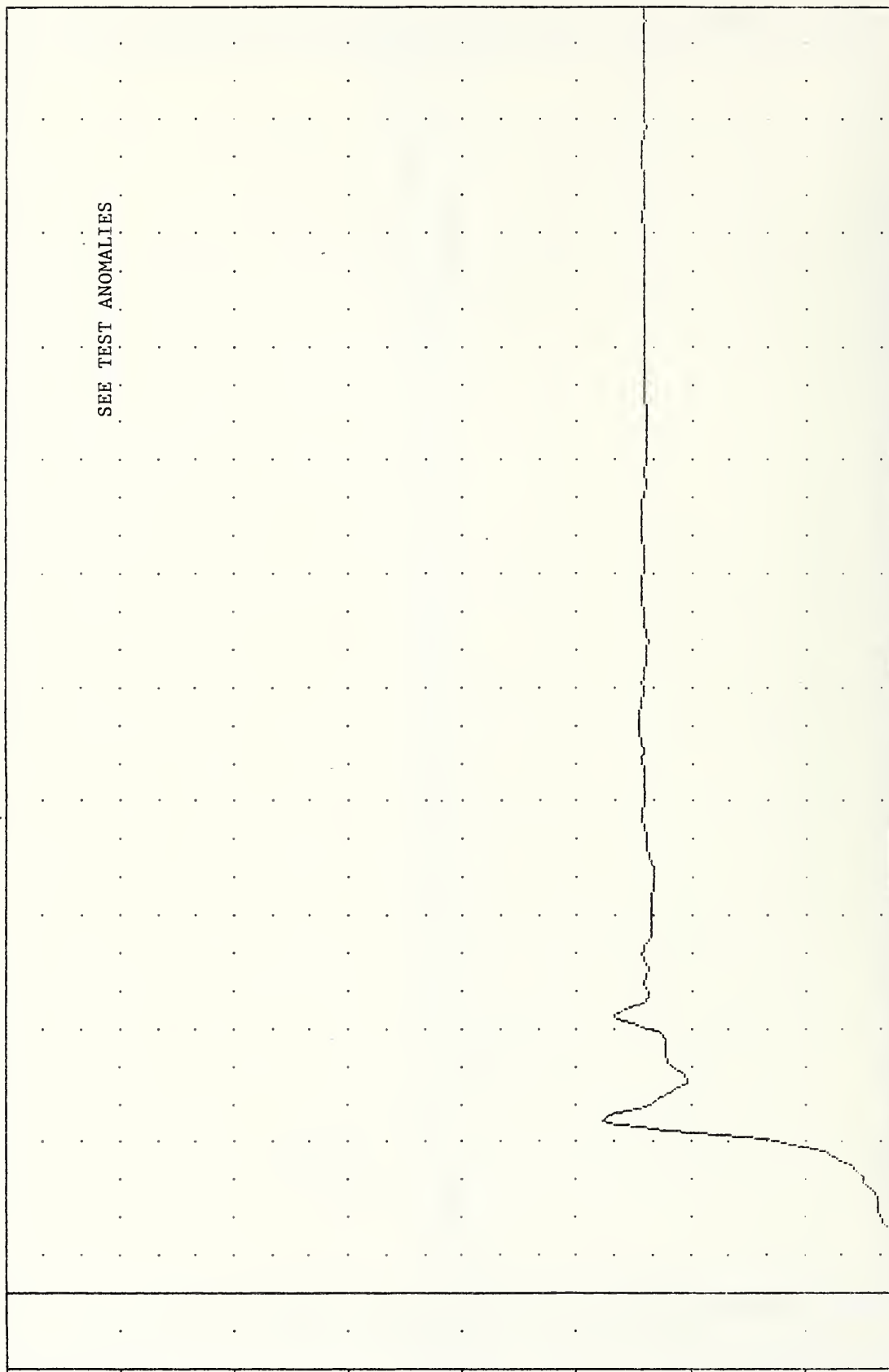
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01RG1

PLOT DATE 16-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.288 -1.25, 128.90 45.62

ACCELERATION (G)



20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER UPPER SPINE RESULTANT

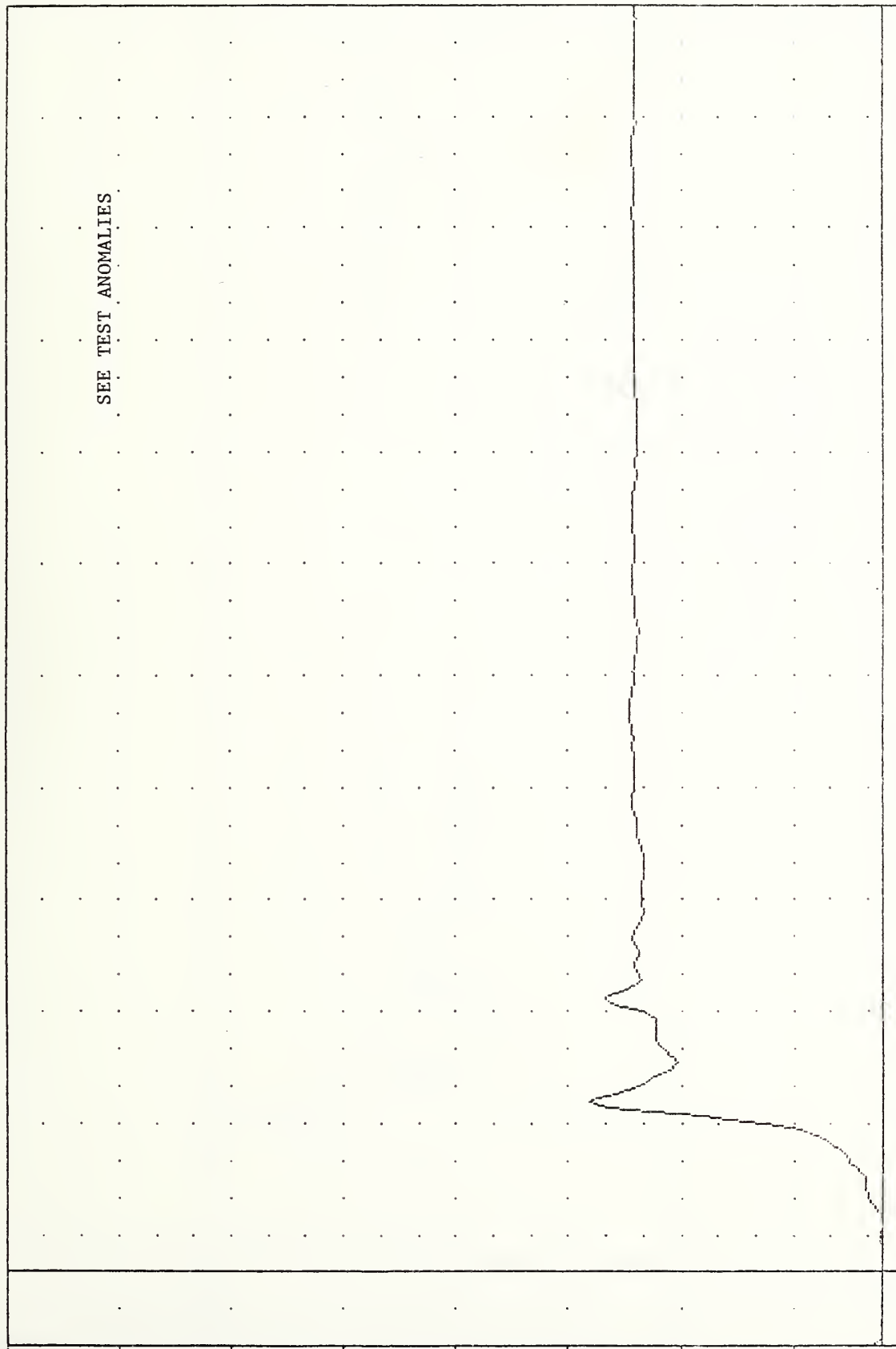
VAT 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01R6A

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ .50

MIN. MAX VALUES = 0.09e 3.13, 130.59 e 45.62

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
 TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER UPPER SPINE RESULTANT USING T01Y6A



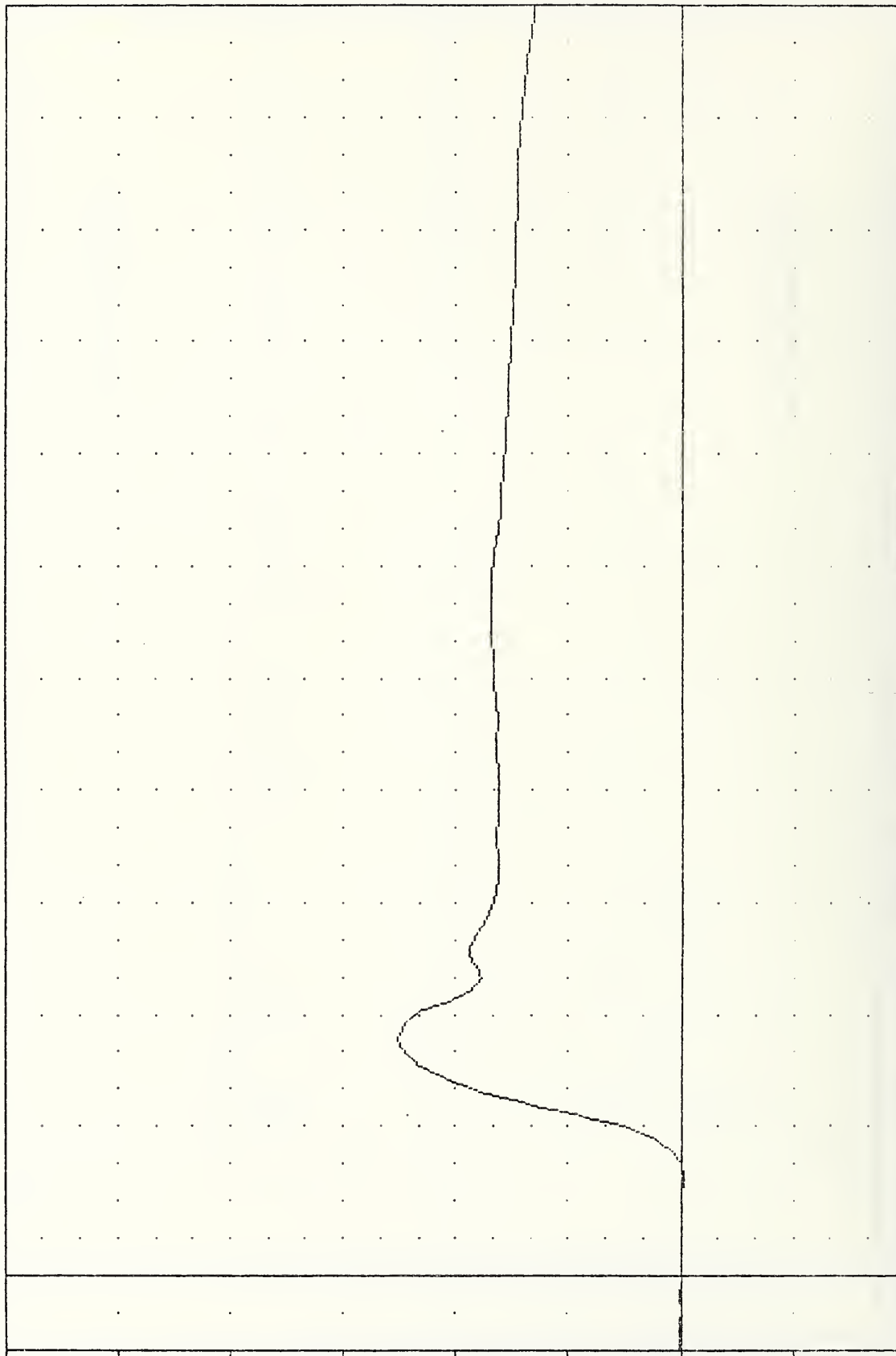
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01YV1

PLOT DATE 19-DEC-85 14:41:31

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.31e 26.25, 25.05 e 63.13

VELOCITY (MPH)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

DELTA V USING T01YV1



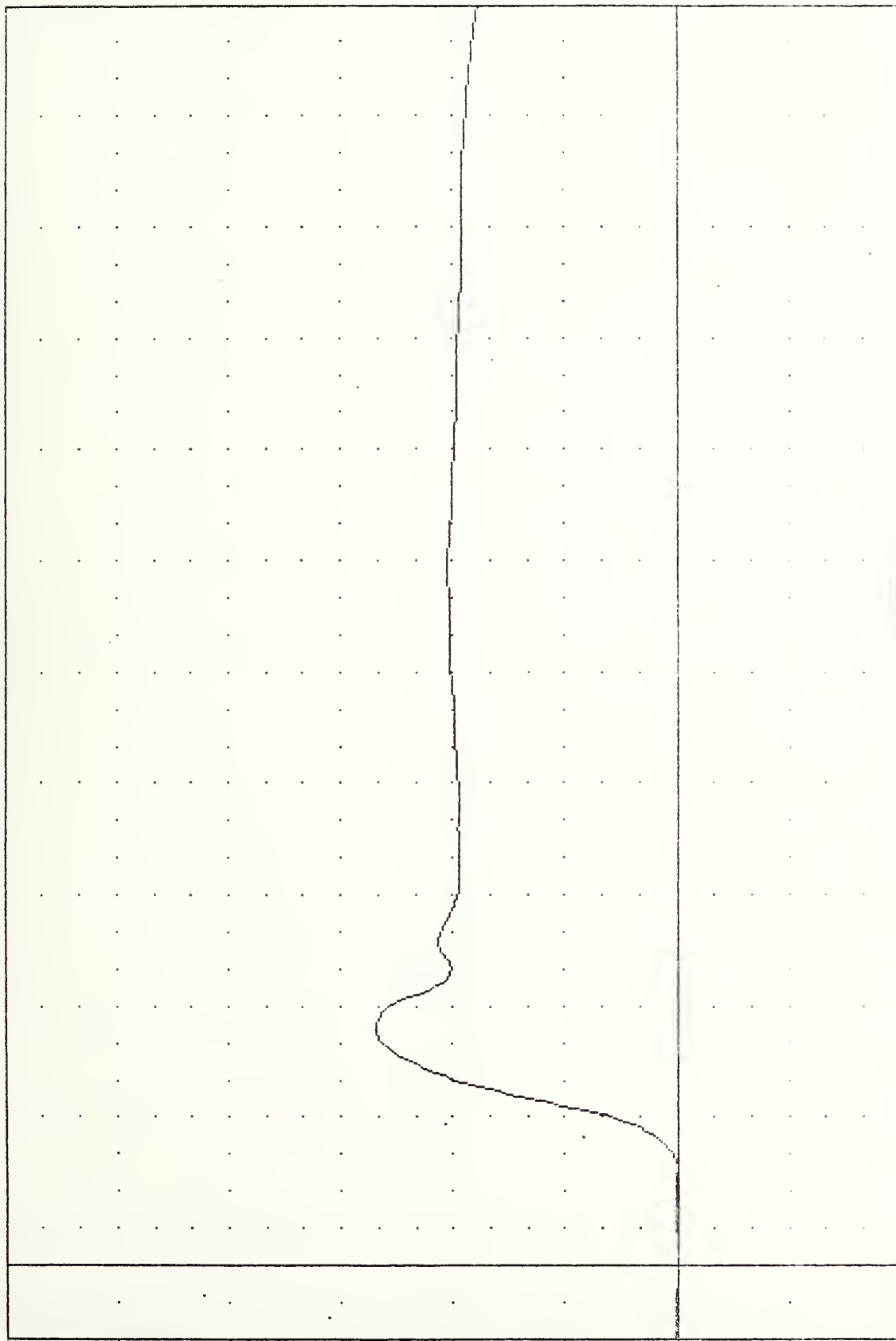
WRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01YVR

PLOT DATE 19-DEC-85 14:41:31

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 3.13, 26.88 @ 63.75

VELOCITY (MPH)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00  
 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

DELTA V USING T01YGR

VRT , 851213  
SI PROTECTION PROD VEHICLE  
853470000000  
112X61

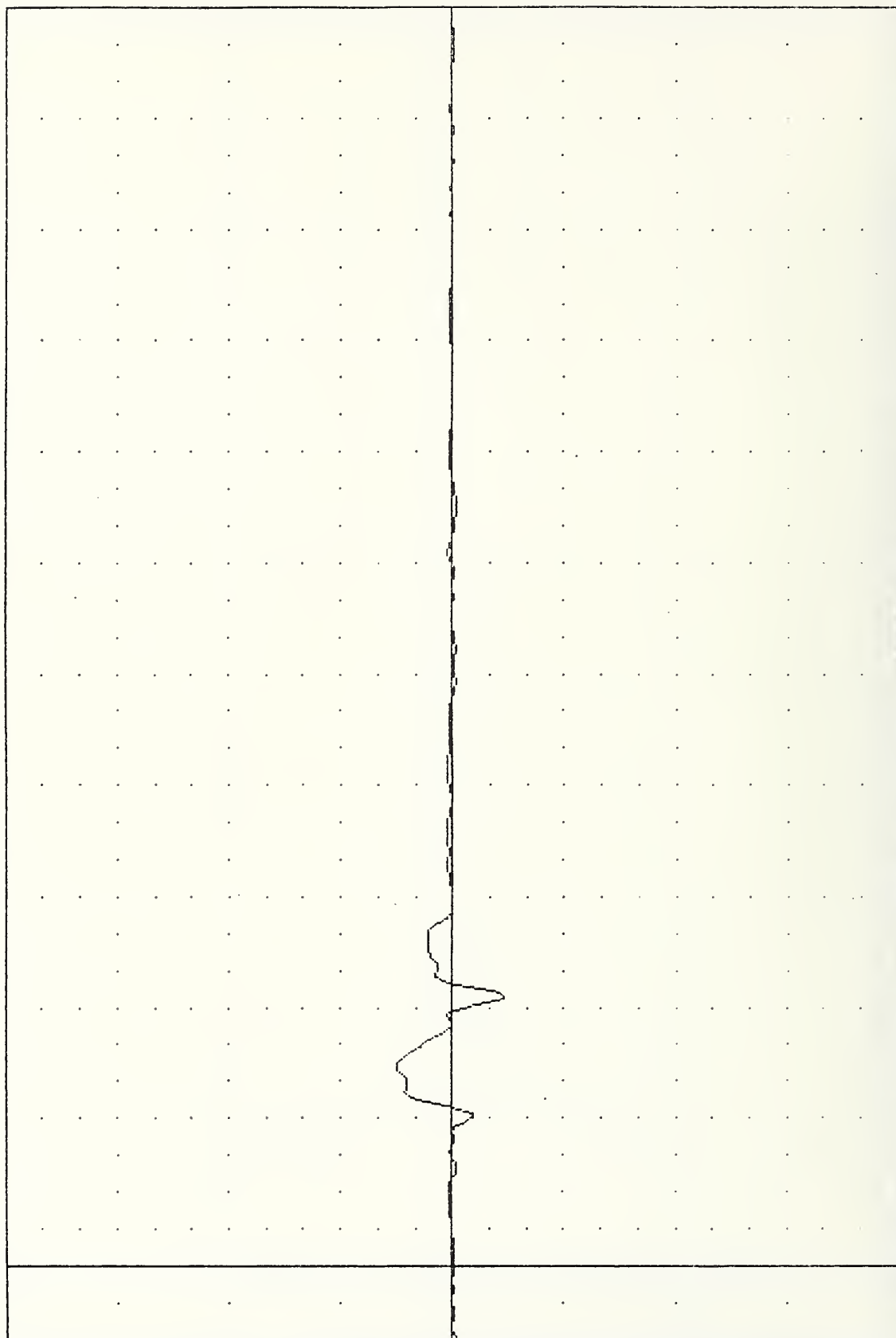
PLOT DATE 18-DEC-85 14:36:47

FILTER = HSR( 136/ 189/ -50

MIN. MAX VALUES = -23.45 73.13 , 24.57 54.38

ACCELERATION (G)

B-14



20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00  
TIME (MSEC)

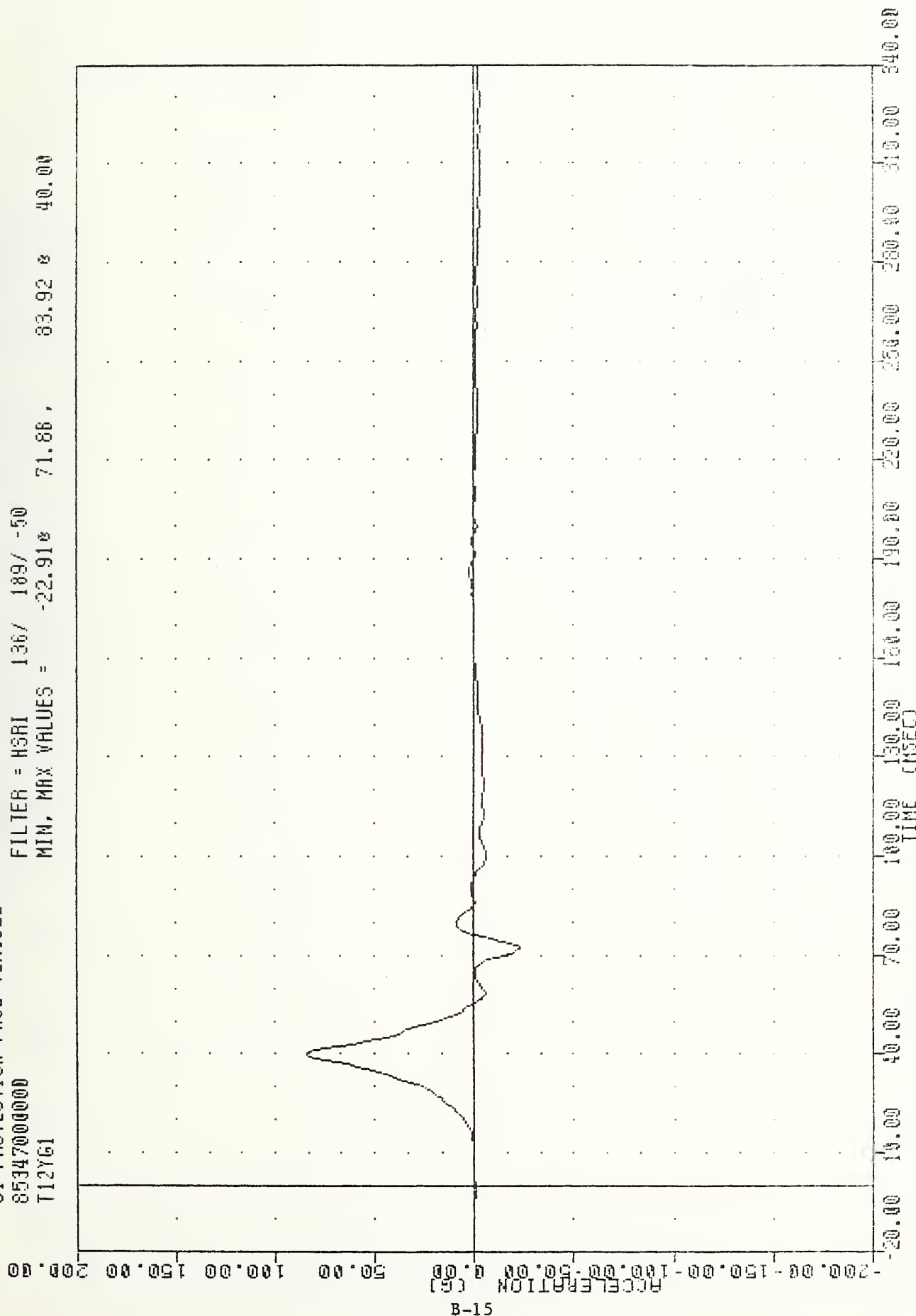
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
DRIVER LOWER SPINE ACCELERATION X AXIS

WRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
T12Y61

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -22.91% 71.88 , 83.92 % 40.00



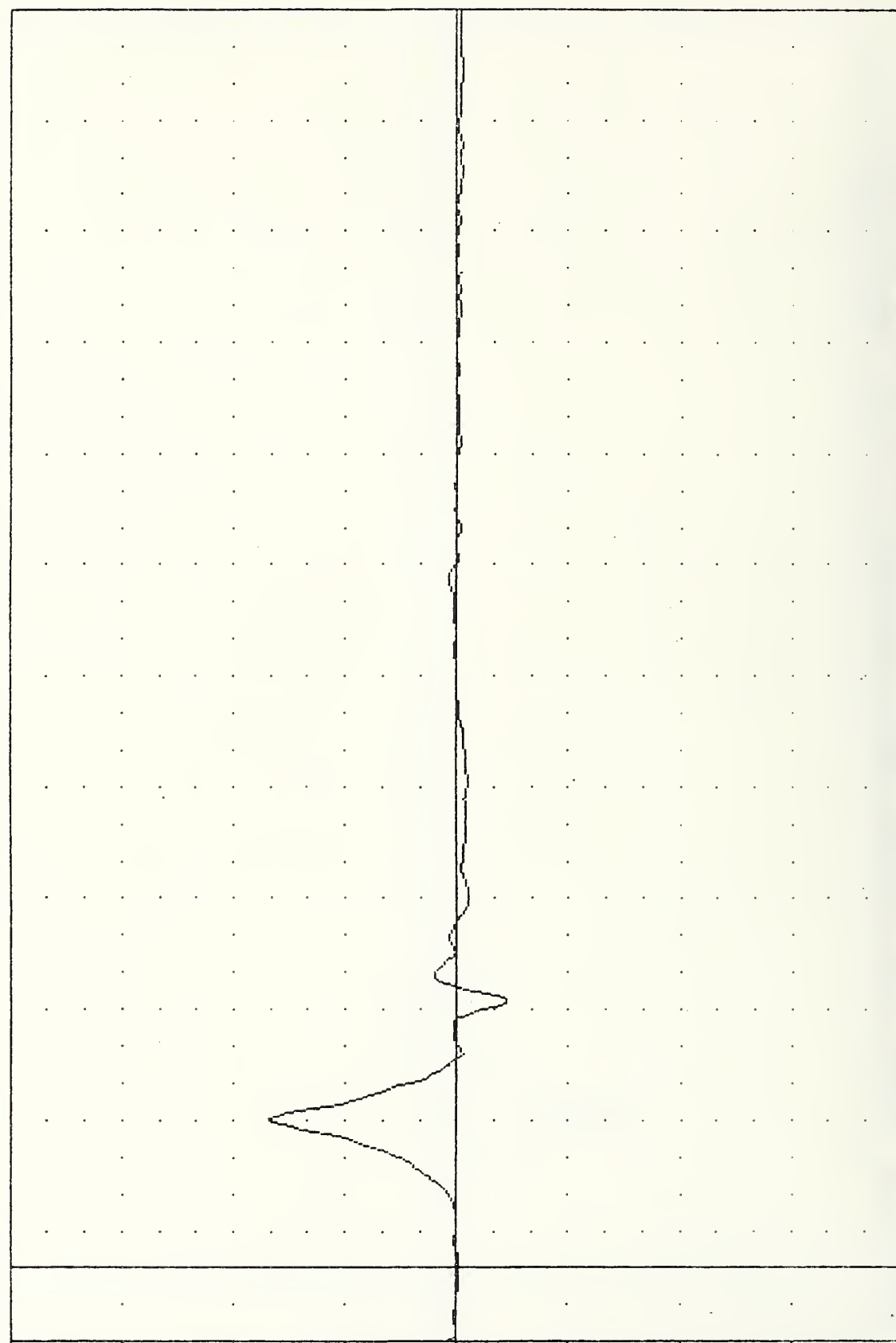
B-15

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
DRIVER LOWER SPINE ACCELERATION Y AXIS

VAT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T12Y6A

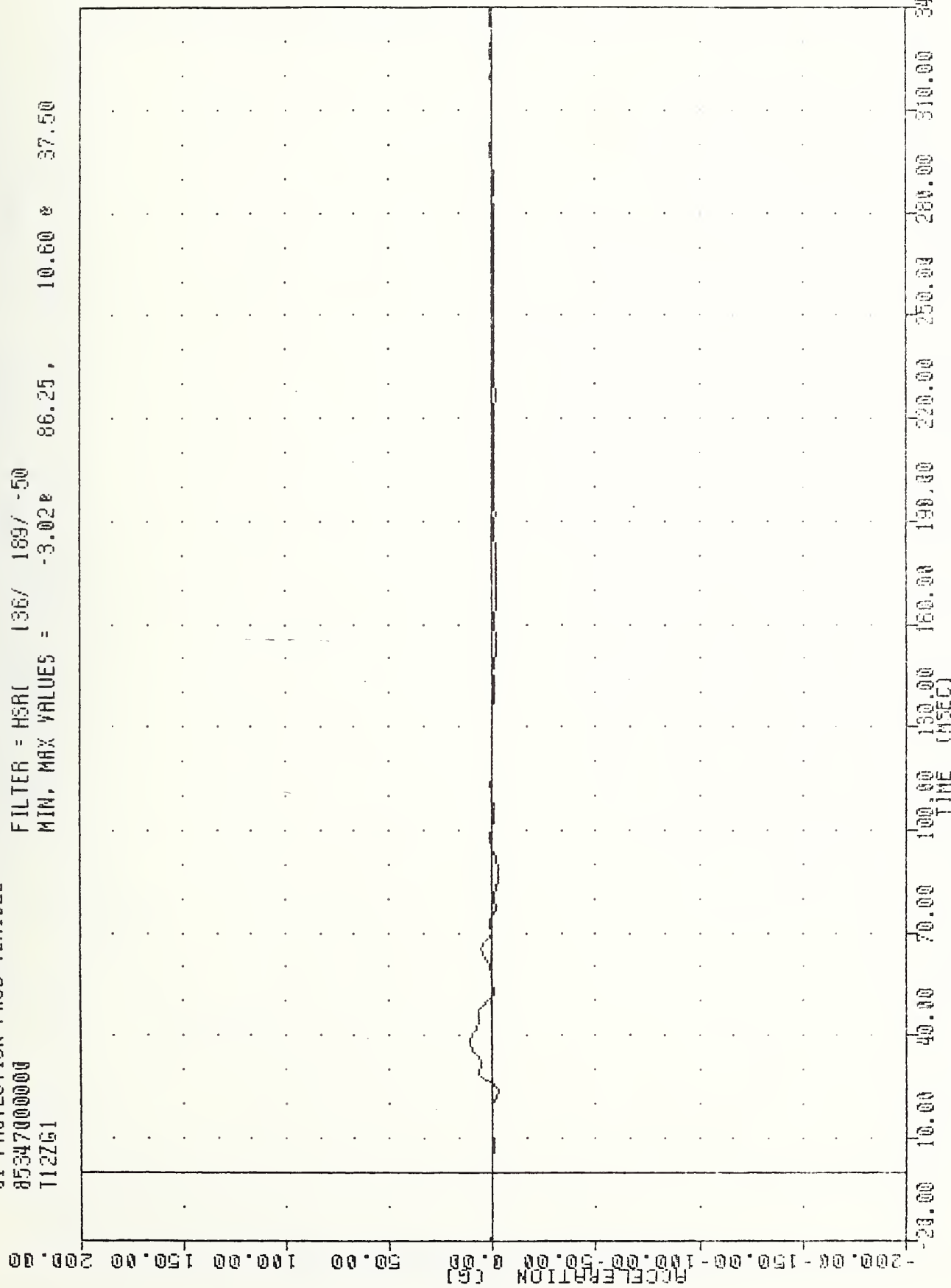
PLOT DATE 18-DEC-85 14:36:47  
 FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -22.35 84.27 e 40.00

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
 TIME (MSEC)  
 MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER LOWER SPINE ACCELERATION -2 Y AXIS

WRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T12ZG1  
 PLOT DATE 18-DEC-85 14:58:47  
 FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -3.02e 86.25, 10.60 e 37.50



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER LOWER SPINE ACCELERATION Z AXIS

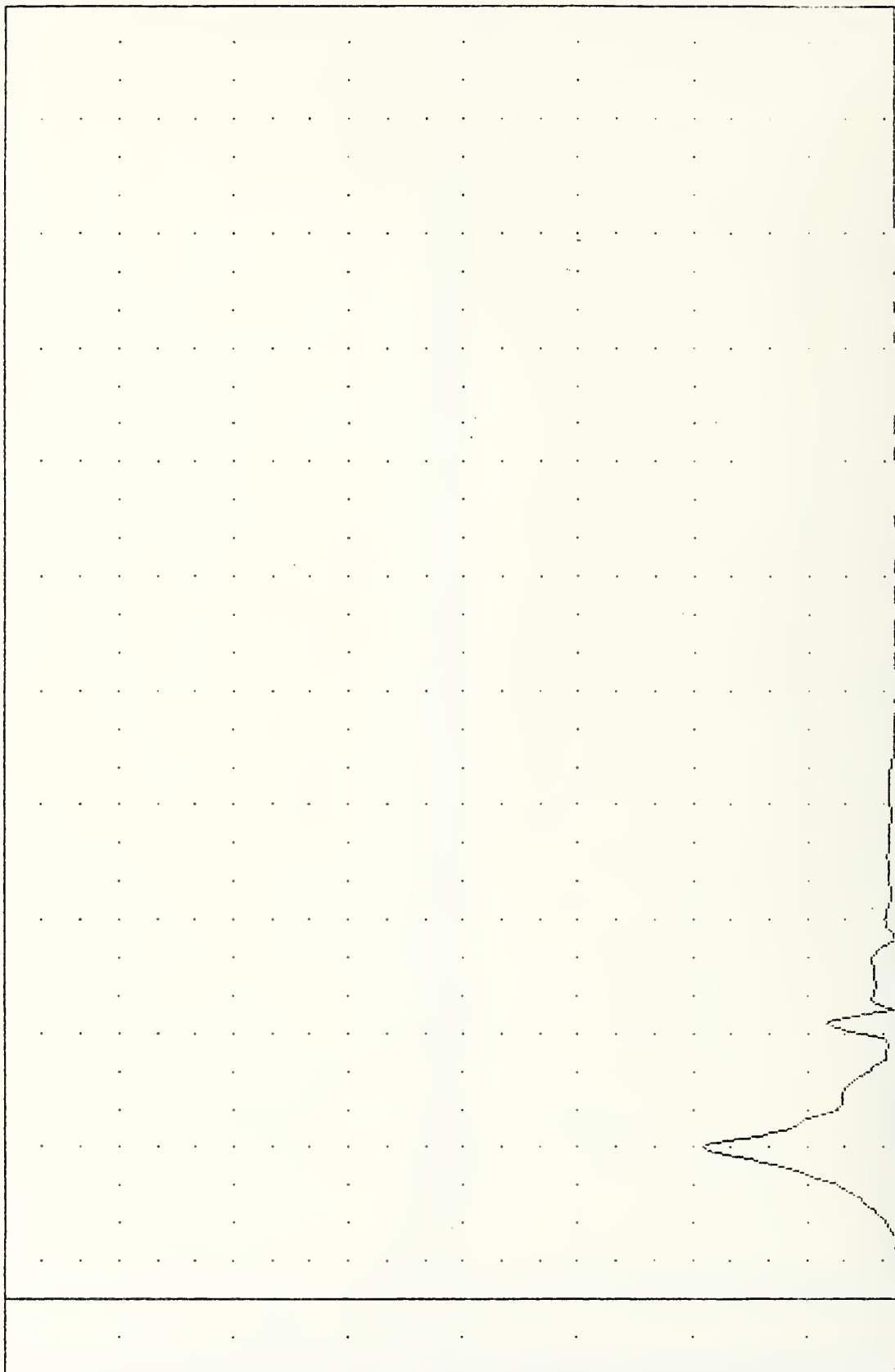
VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
T12RG1

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.148 -10.00, 84.95 40.00

ACCELERATION (G)



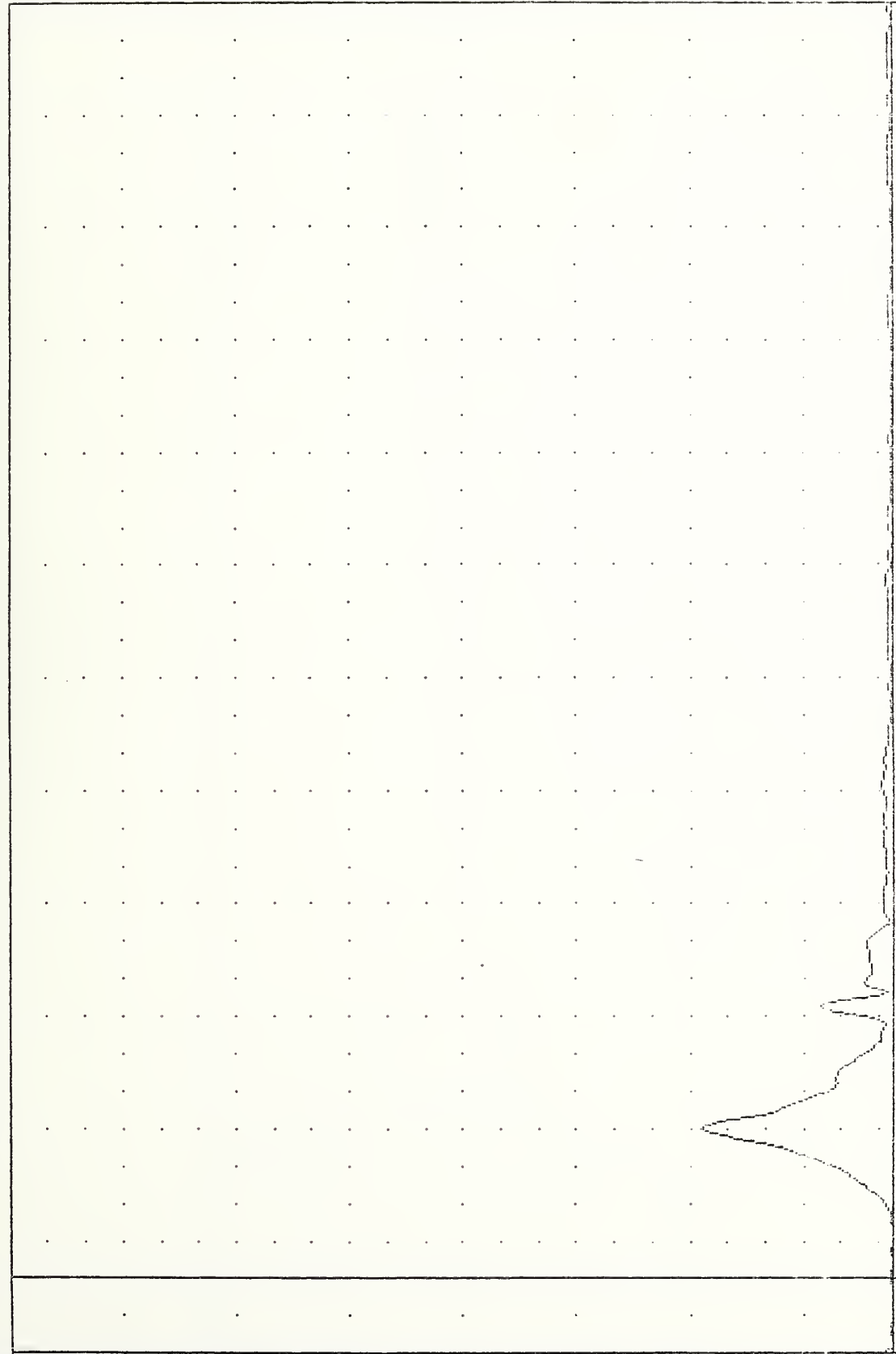
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
DRIVER LOWER SPINE RESULTANT

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T12Y6A

PLOT DATE 18-DEC-85 14:36:47  
 FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = 0.11 e -16.87 , 25.30 e 40.00

ACCELERATION [G]  
 -10.00  
 -5.00  
 0.00  
 5.00  
 10.00  
 15.00  
 19.00  
 23.00  
 27.00  
 31.00  
 35.00  
 39.00  
 43.00



-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER LOWER SPINE RESULTANT USING T12Y6A



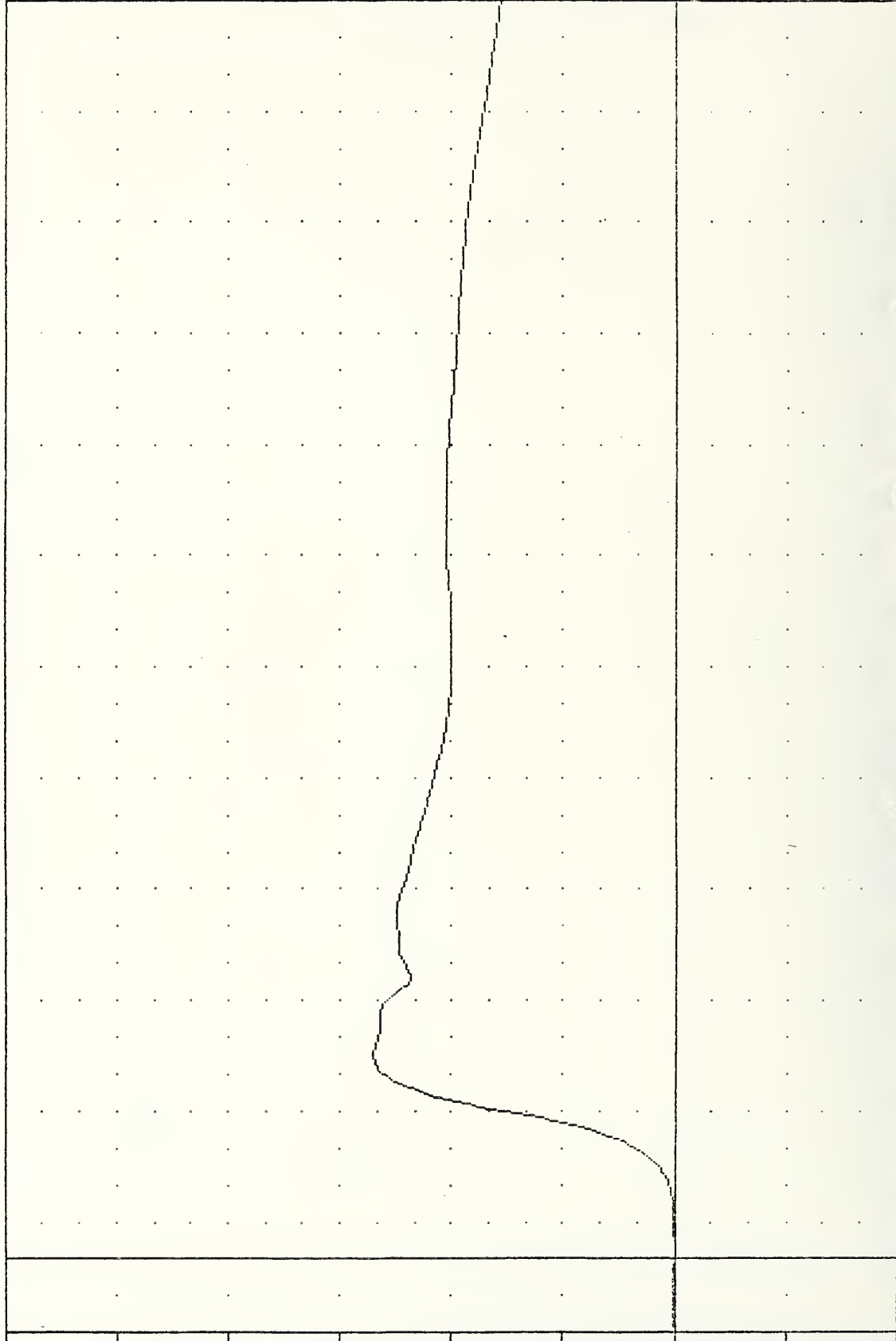
VAT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T12YV1

PLOT DATE 19-DEC-85 14:41:31

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.01e 3.13, 27.00 e 55.63

VELOCITY CM/PH



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING T12YV1

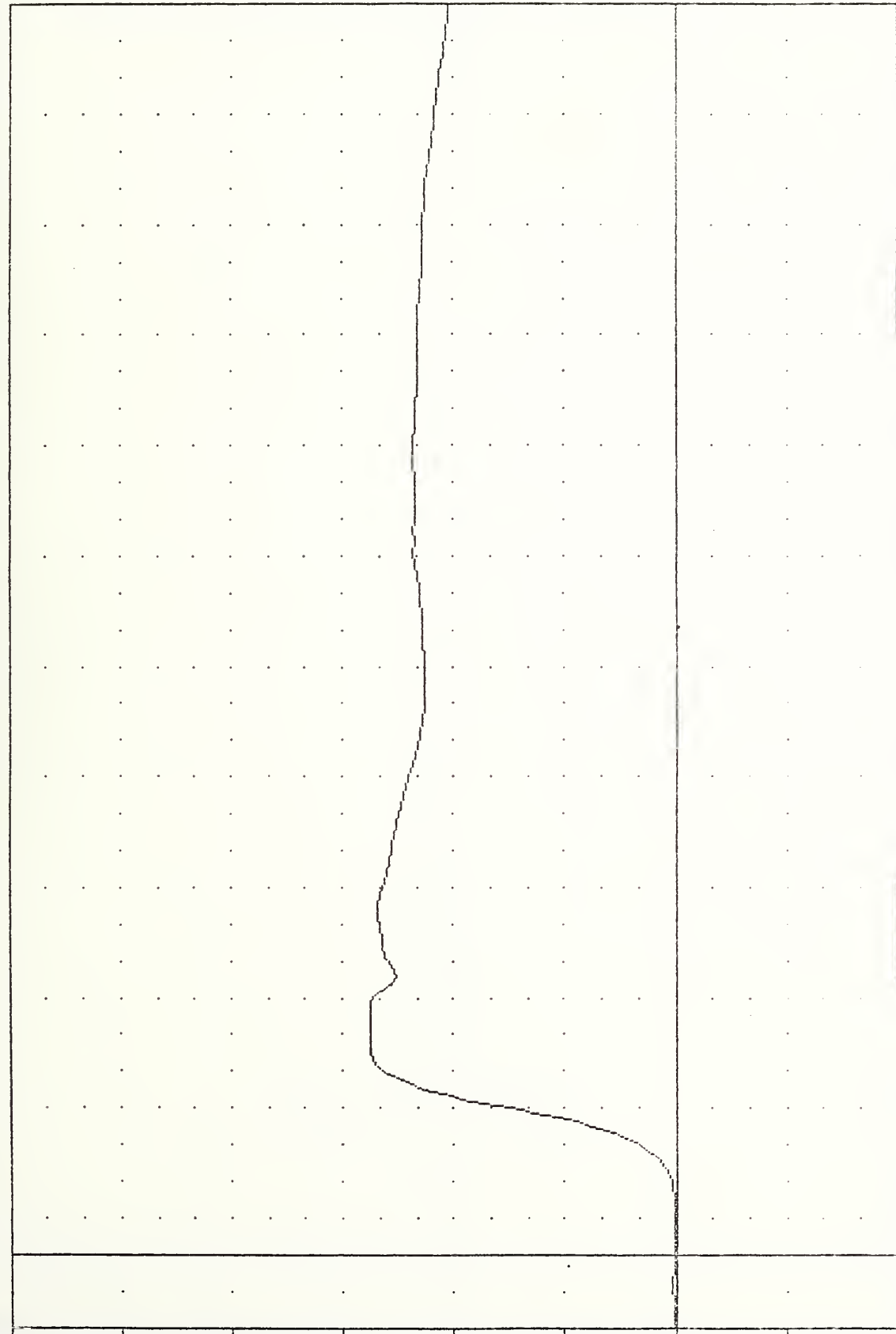
VAT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T12YVA

PLOT DATE 19-DEC-85 14:41:31

FILTER = MSRI 136/ 189/ -50

MIN, MAX VALUES = 0.00e -20.00 , 27.56 v 67.50

VELOCITY (MPH)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00  
 TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING T12YGA

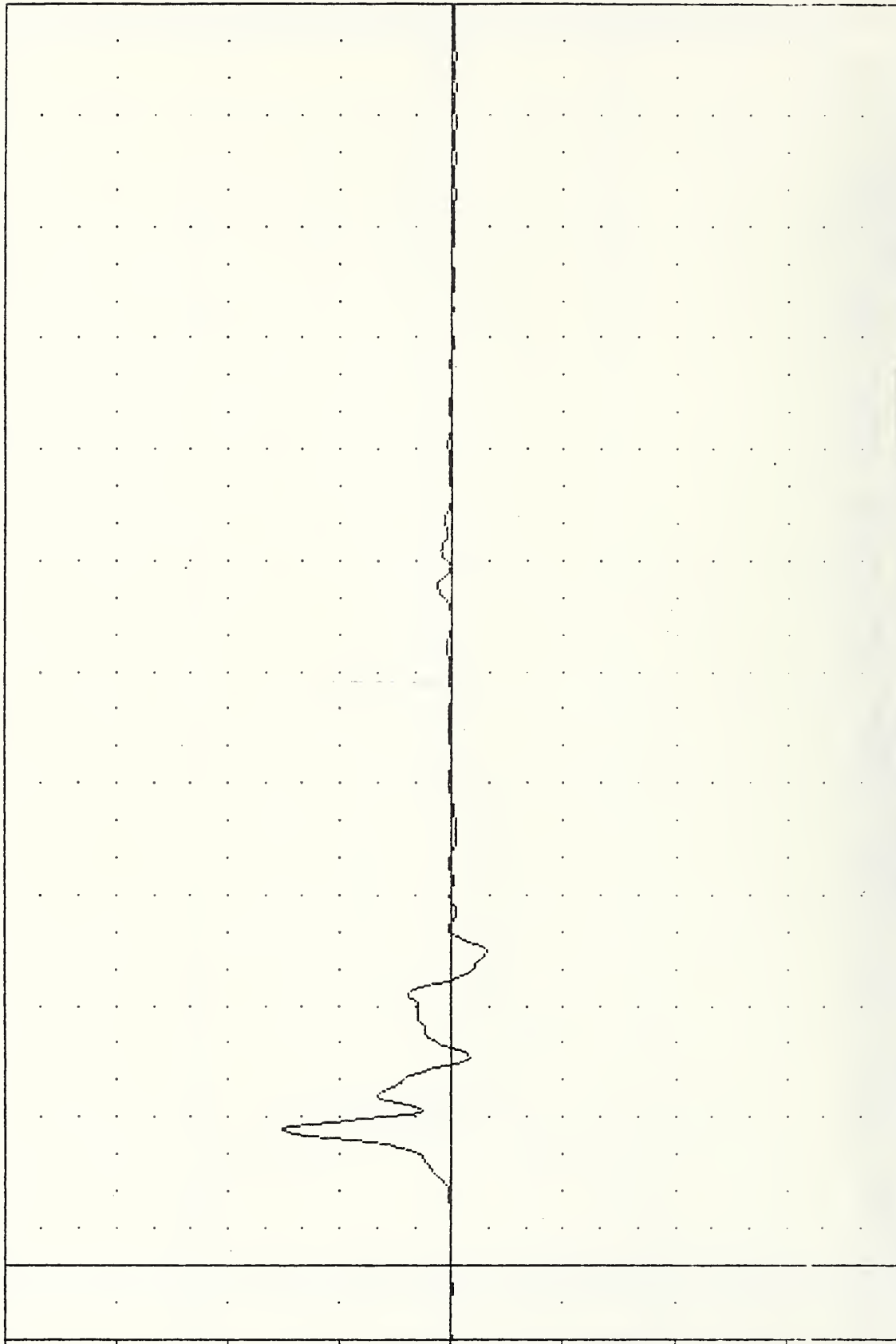
VRT  
SI PROTECTION PROD VEHICLE  
85347000000  
LURY61

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 139/ -50

MIN, MAX VALUES = -15.416 84.38, 75.68 36.88

ACCELERATION (G)



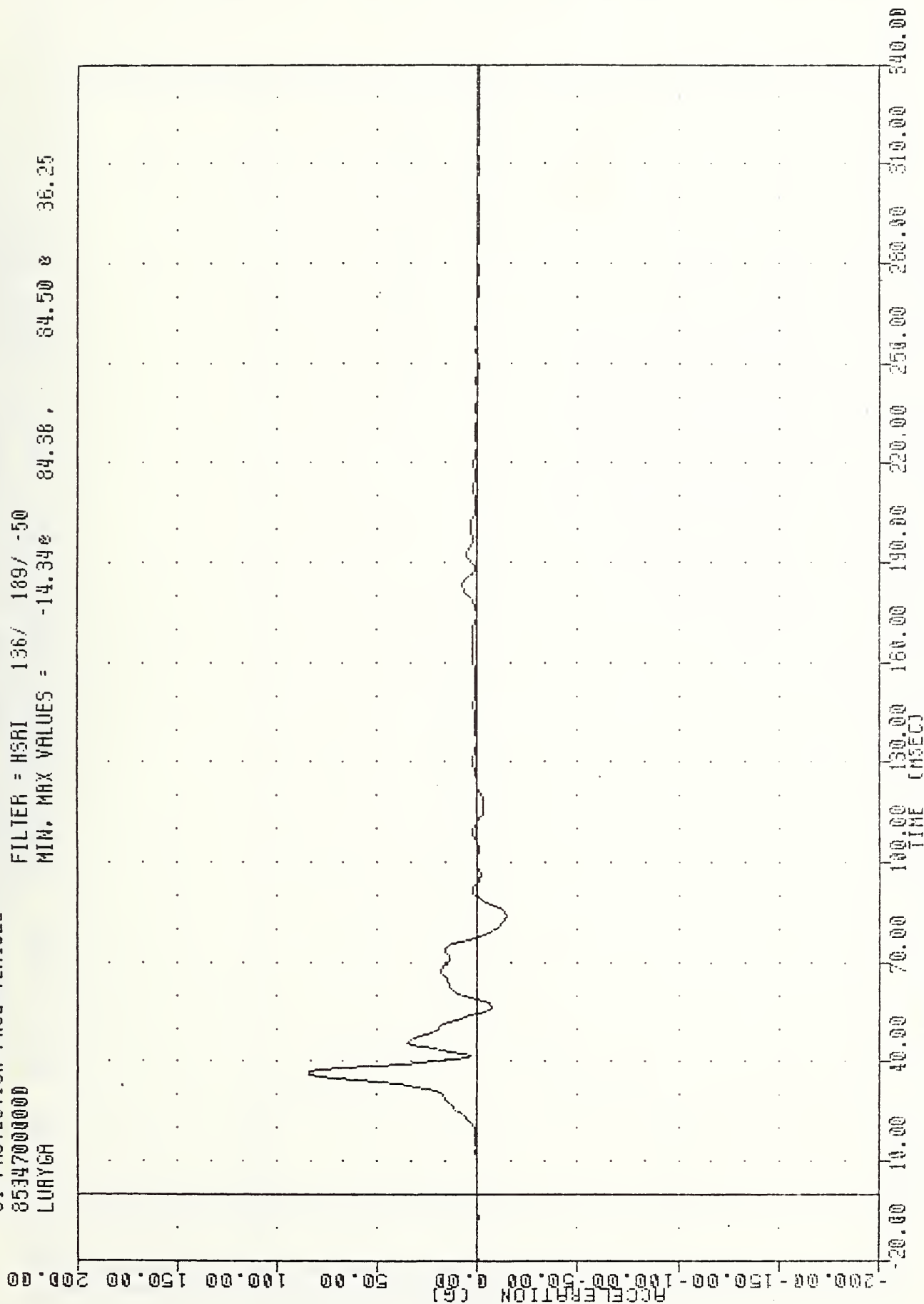
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
DRIVER LEFT UPPER RIB ACCELERATION Y AXIS

VRT 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LURYG

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -14.34 84.38 84.50 36.25



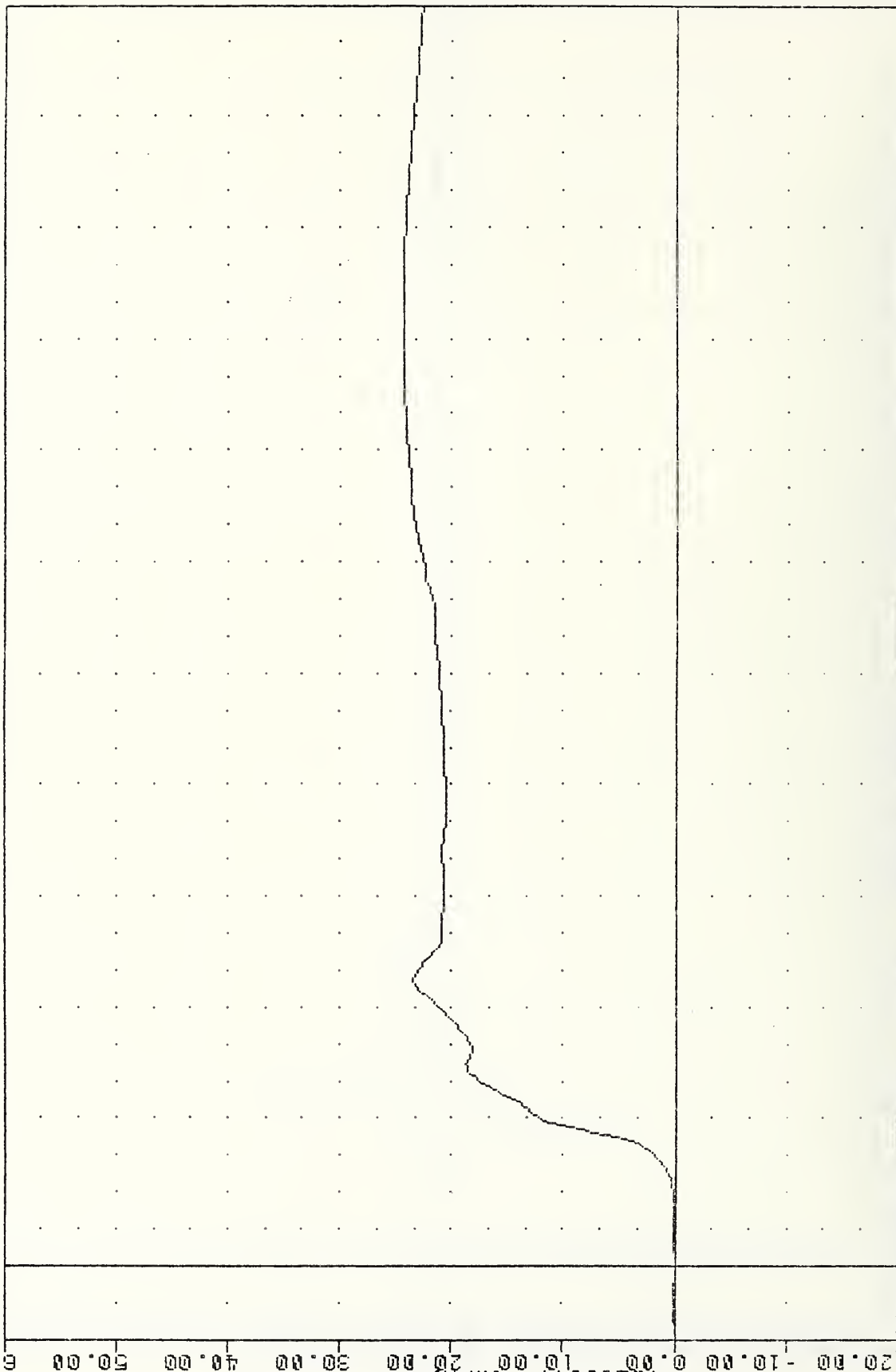
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 853470000000  
 LURYV1

PLOT DATE 19-DEC-85 14:41:31

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.028 -18.13, 24.39 8 246.25

VELOCITY (MPH)  
 B-24



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
 TIME (msec)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING LURYG1

WAT 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LURYVA

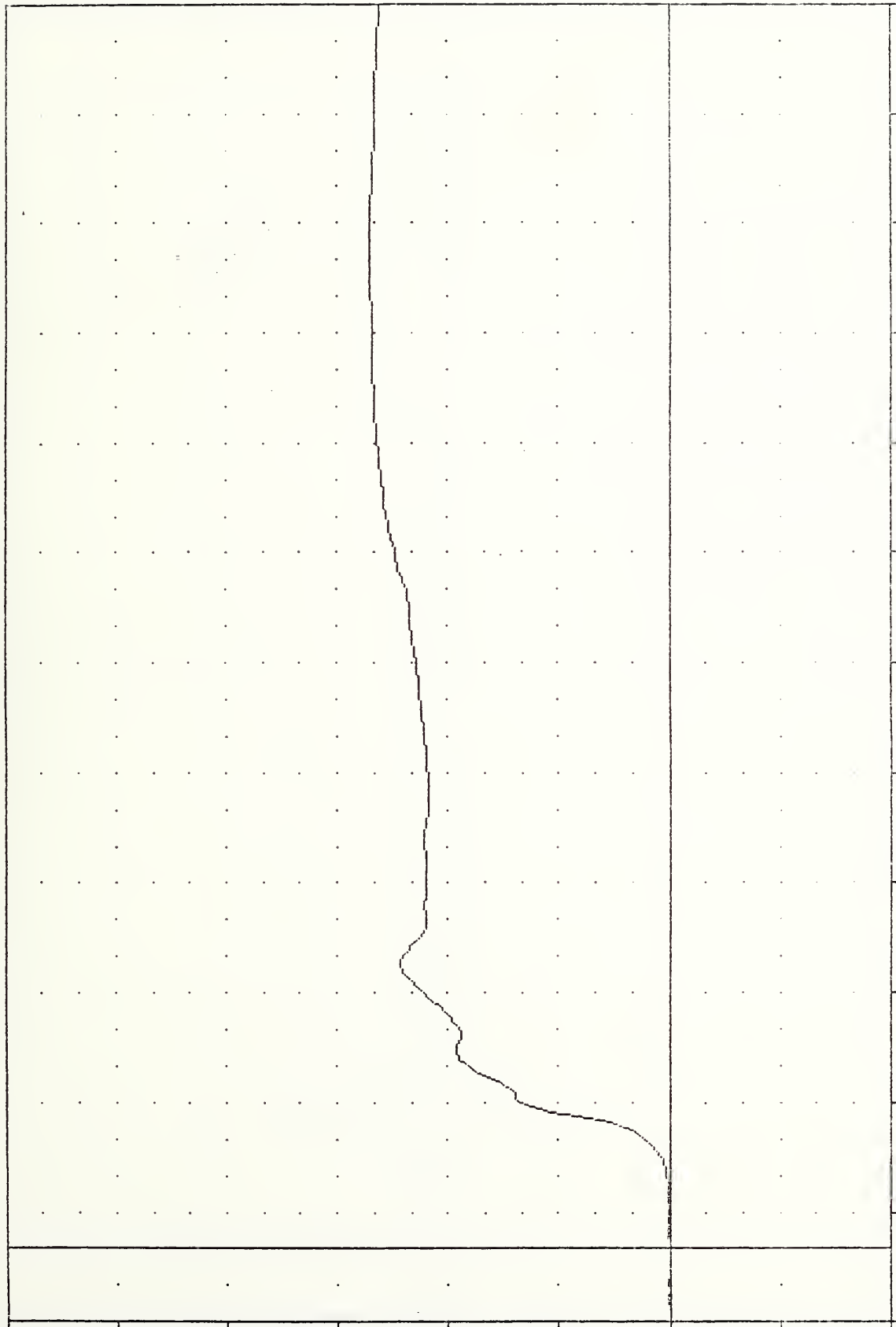
PLOT DATE 19-DEC-85 14:41:31

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.030 -18.75, 27.03 \* 268.13

VELOCITY (MPH)

B-25



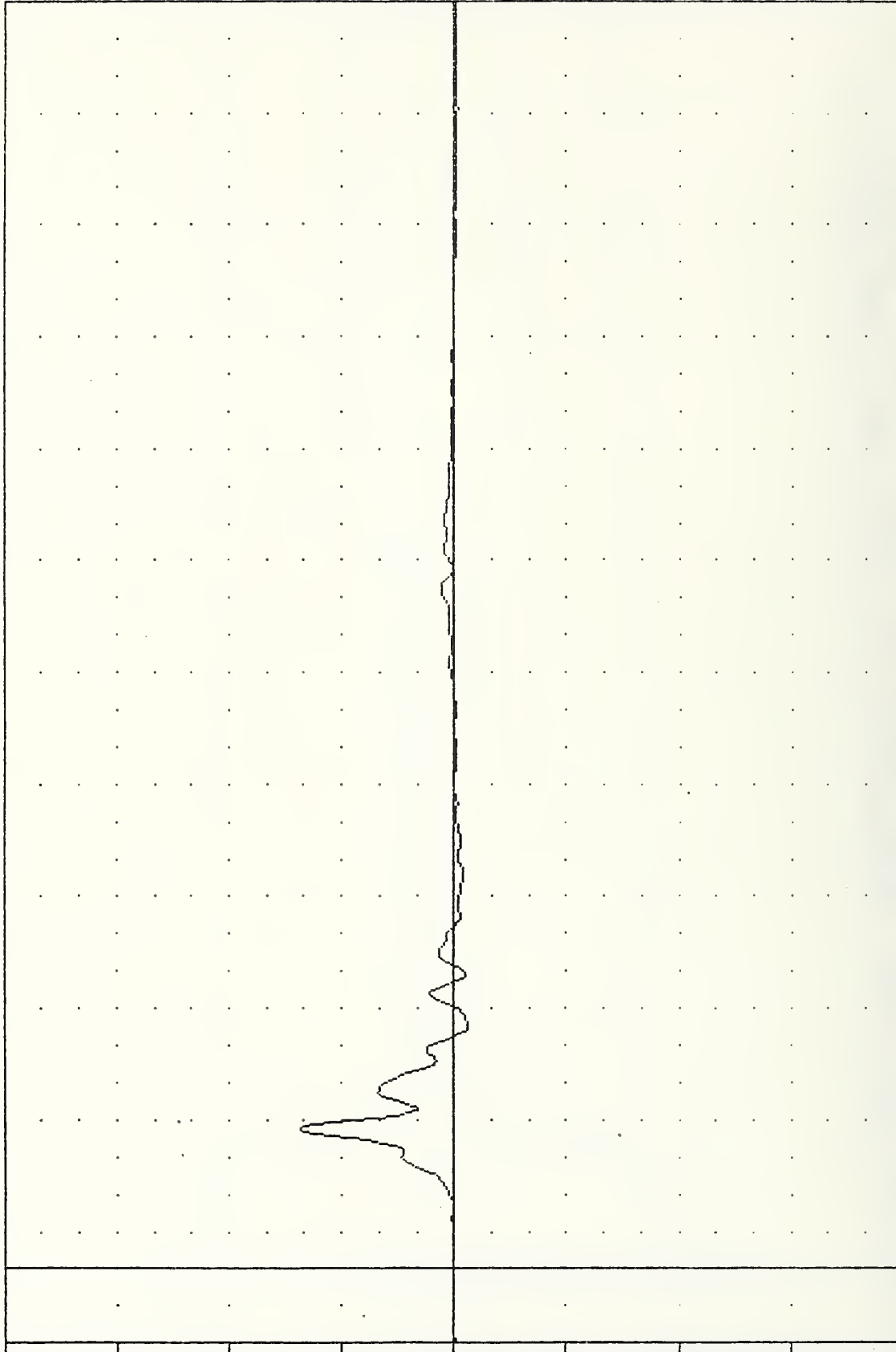
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
DELTA V USING LURYVA

WRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LLRY61

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50  
 MIN, MAX VALUES = -6.04e 65.00 66.63 e 37.50

ACCELERATION (G)



-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00  
 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

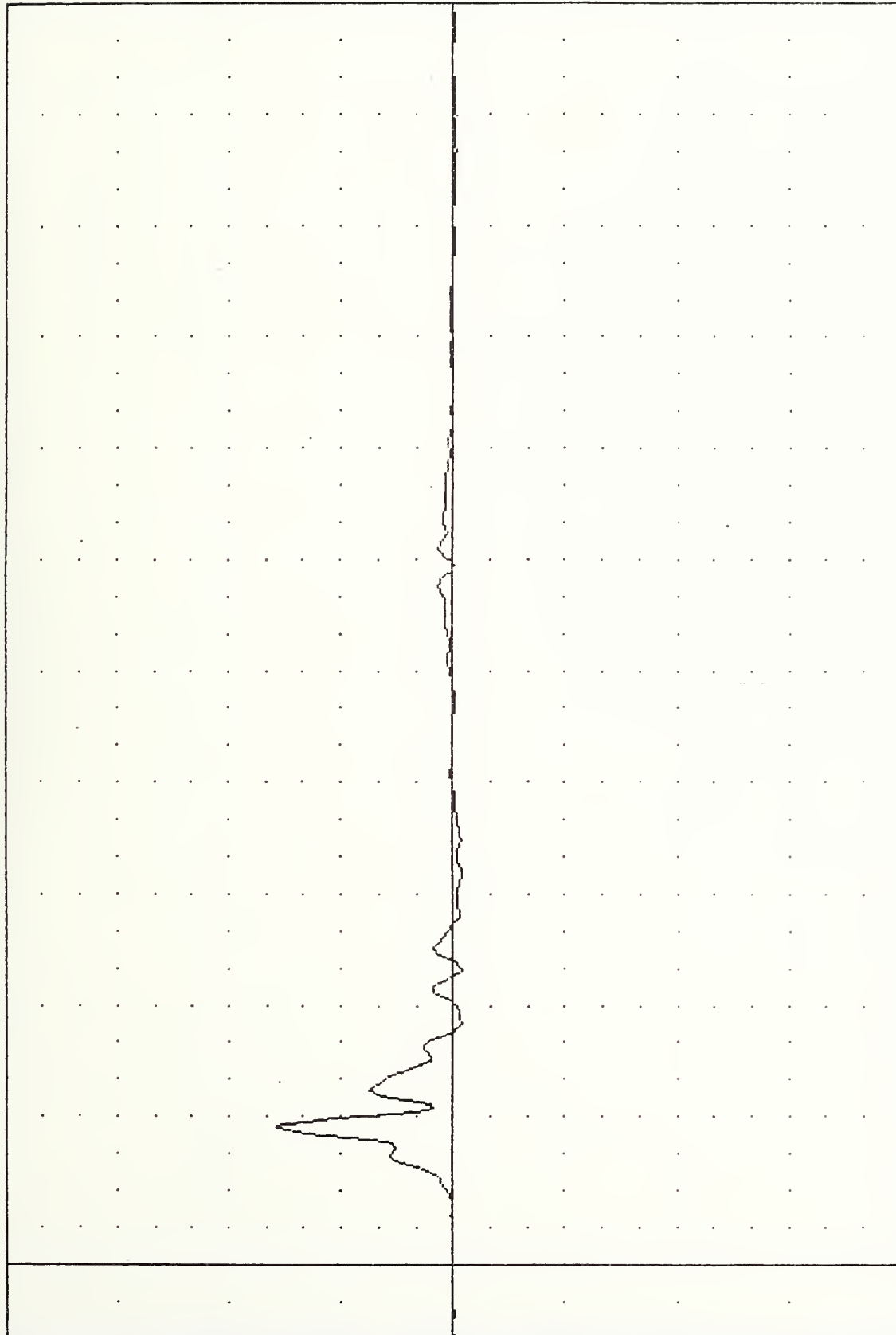
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER LEFT LOWER RIB ACCELERATION Y AXIS



VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LLYGCA

PLOT DATE 18-DEC-85 14:36:47  
 FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -4.09e 80.00 , 79.03 e 37.50

ACCELERATION (G)



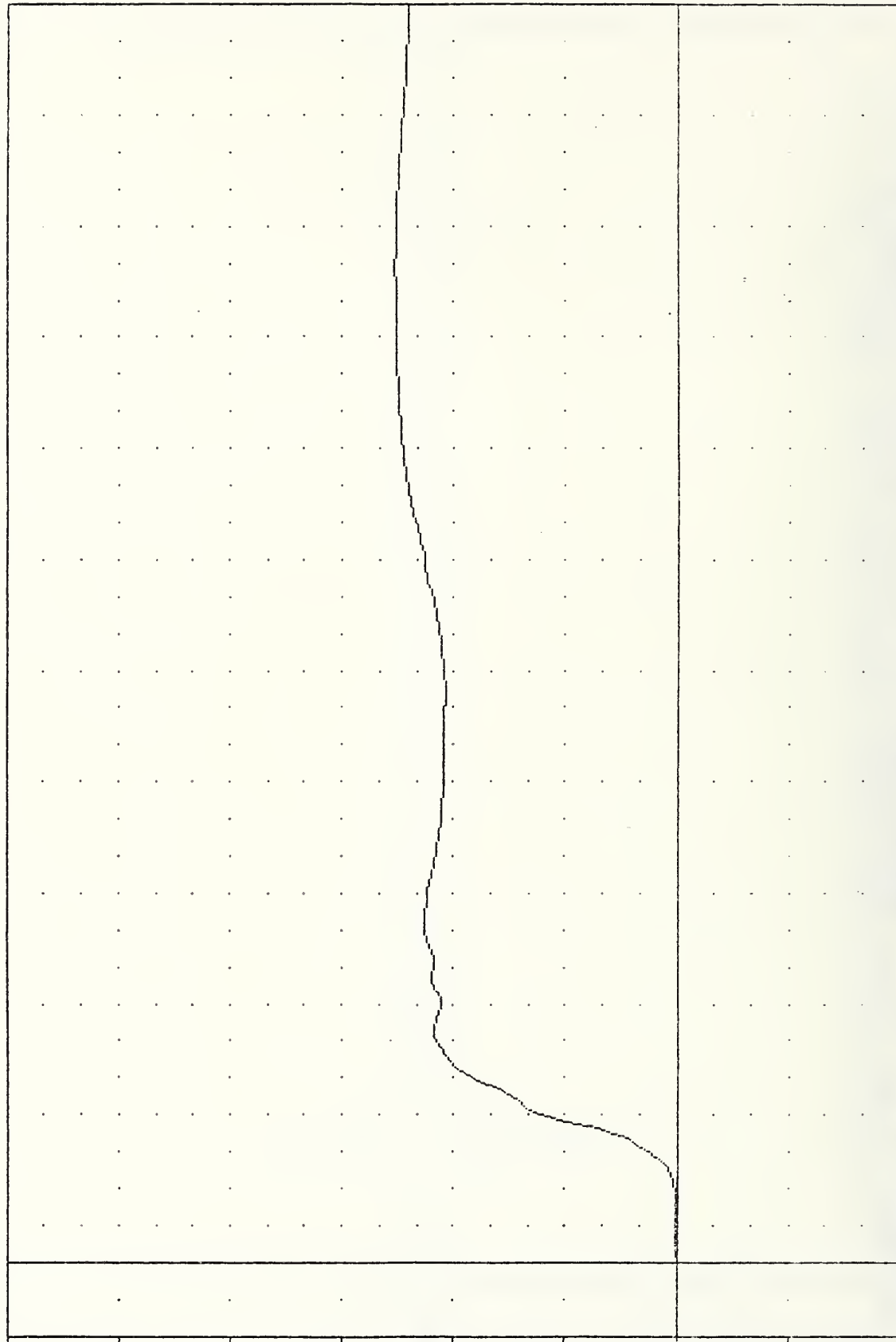
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER LEFT LOWER RIB ACCELERATION #2 Y AXIS

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LLYV1

PLOT DATE 19-DEC-85 14:41:31

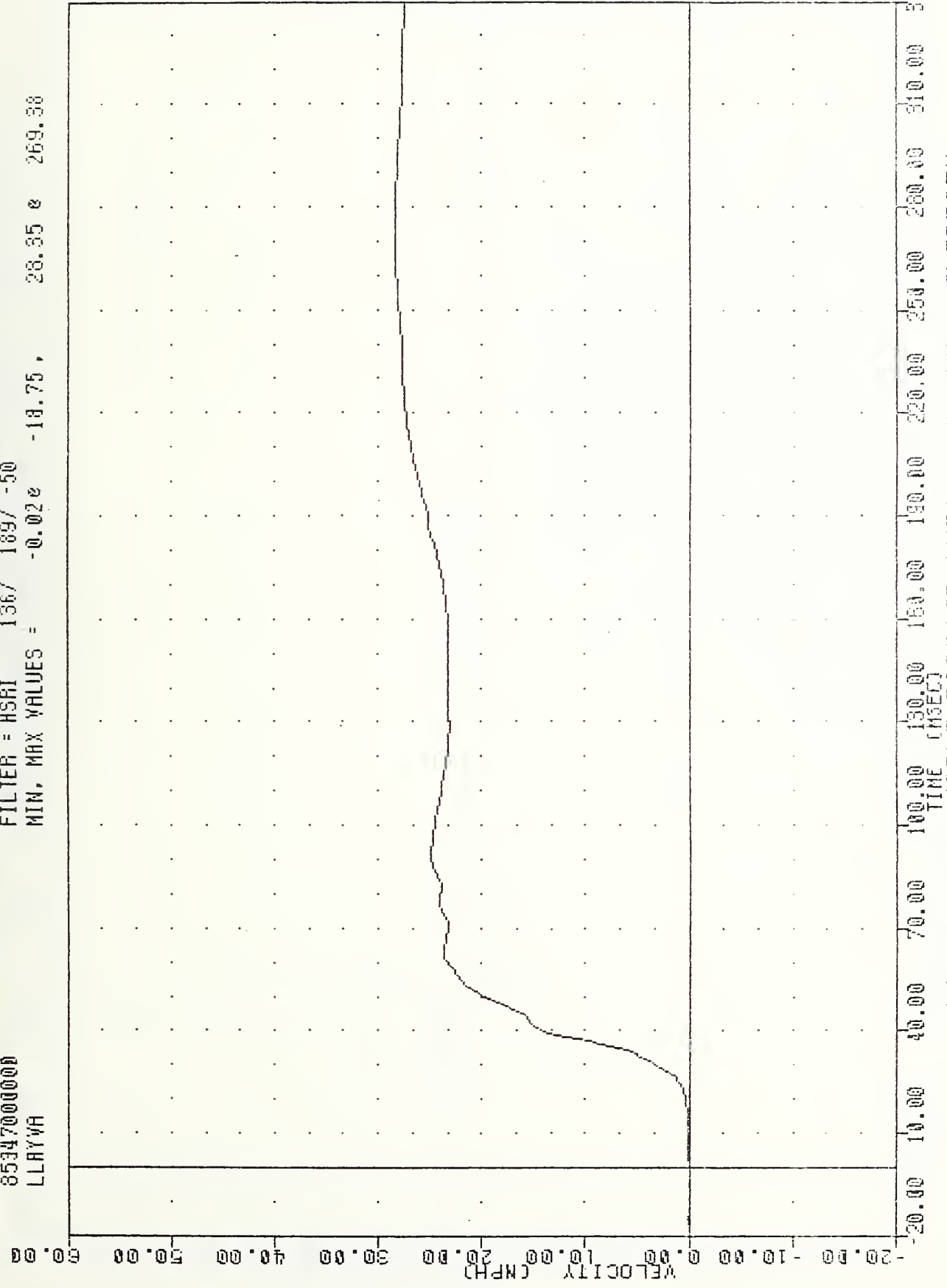
FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -0.030 -18.13, 25.26 & 269.38

VELOCITY (MPH)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
 TIME (MSEC)  
 MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING LLYV1

WRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LLYVA  
 PLOT DATE 19-DEC-85 14:41:31  
 FILTER = HSRI 136/ 189/ -50  
 MIN, MAX VALUES = -0.02e -18.75, 28.35 e 269.38



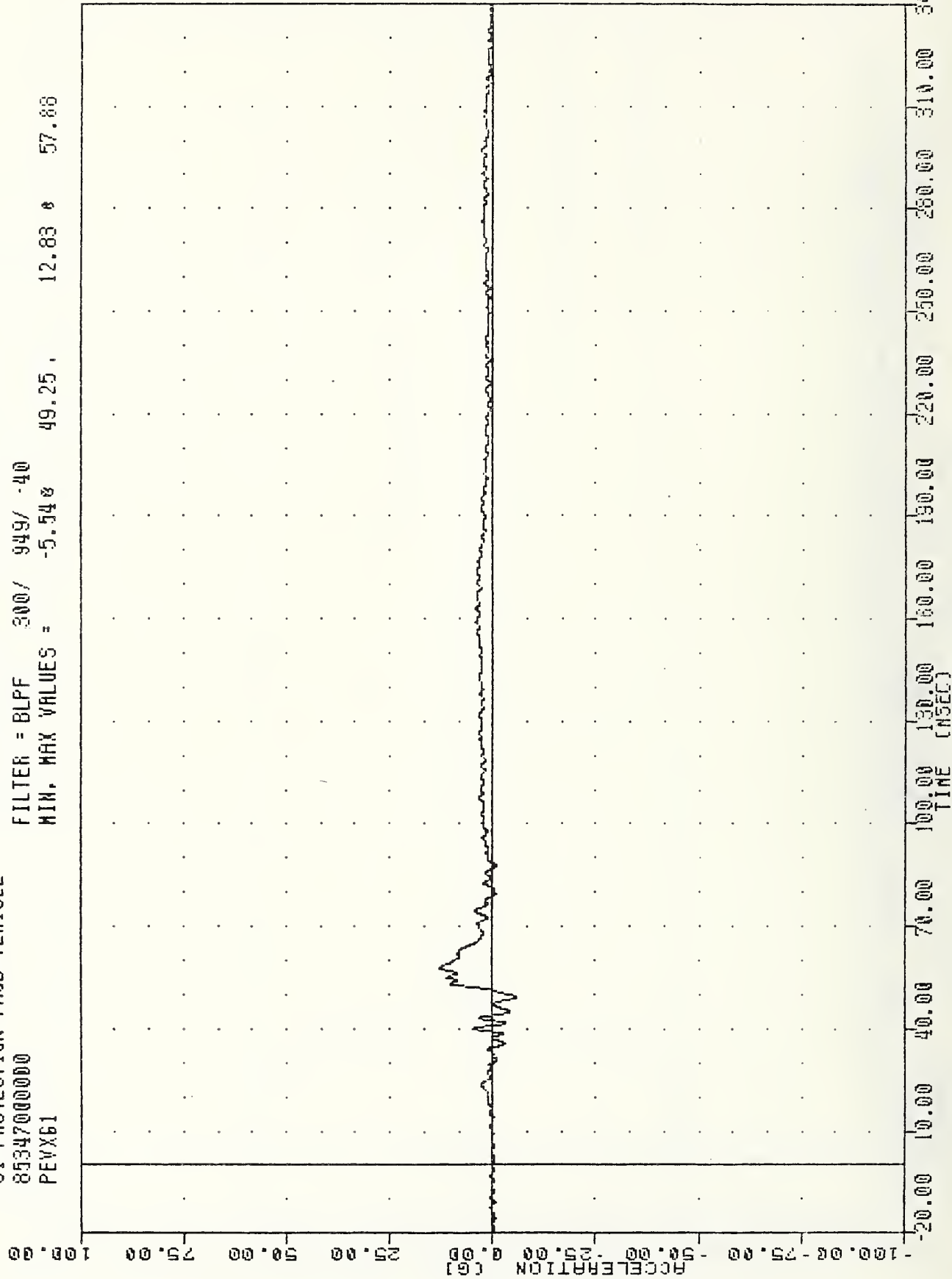
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING LLYVA

VAT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 PEVX61

PLOT DATE 18-DEC-85 14:35:44

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -5.54g 49.25, 12.83 g 57.86



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER PELVIS ACCELERATION X AXIS

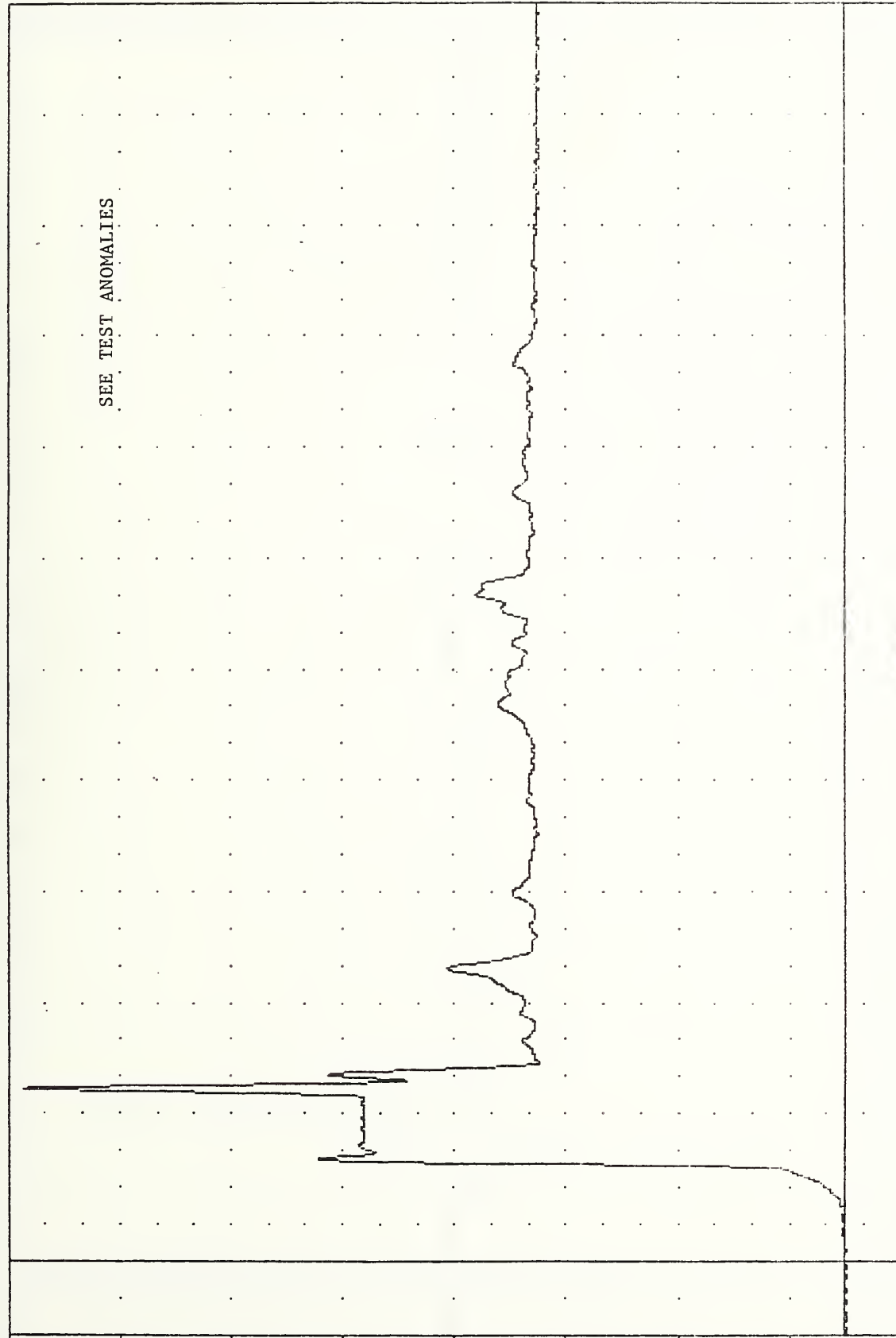
VRT 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 PEVYG1

PLOT DATE 18-DEC-85 14:35:44

FILTER = BLPF 3000/ 849/ -40

MIN. MAX VALUES = -1.24E -11.13, 368.61E 46.75

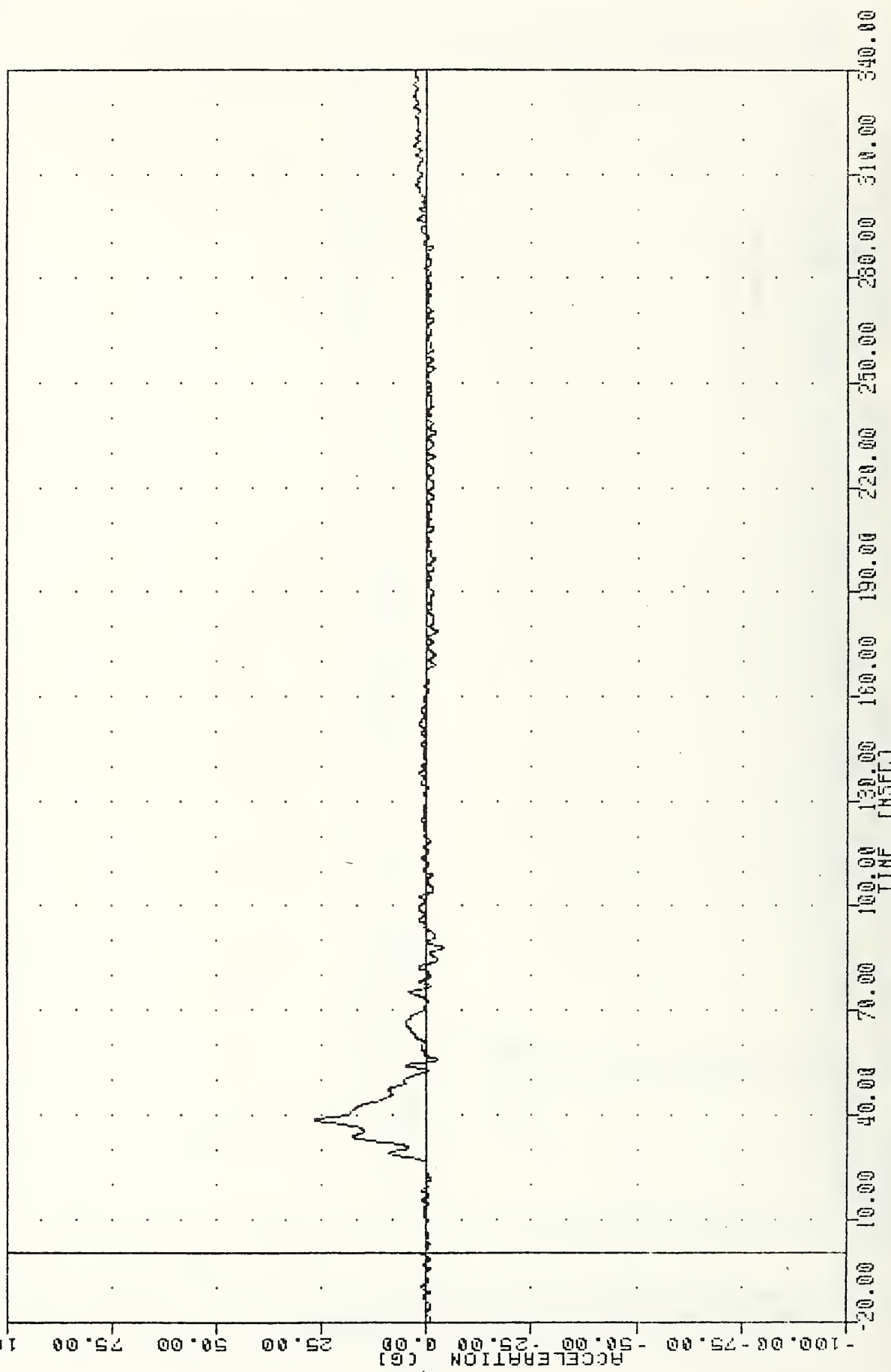
ACCELERATION (G)



-25.00 25.00 50.00 75.00 100.00 125.00 150.00 175.00 200.00 225.00 250.00 275.00 300.00 325.00 350.00  
 TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER PELVIS ACCELERATION Y AXIS

VAT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 PEVZ61  
 PLOT DATE 18-DEC-85 14:35:44  
 FILTER = BLPF 300/ 949/ -40  
 MIN. MAX VALUES = -3.850 88.00 , 26.49 33.50



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER PELVIS ACCELERATION Z AXIS



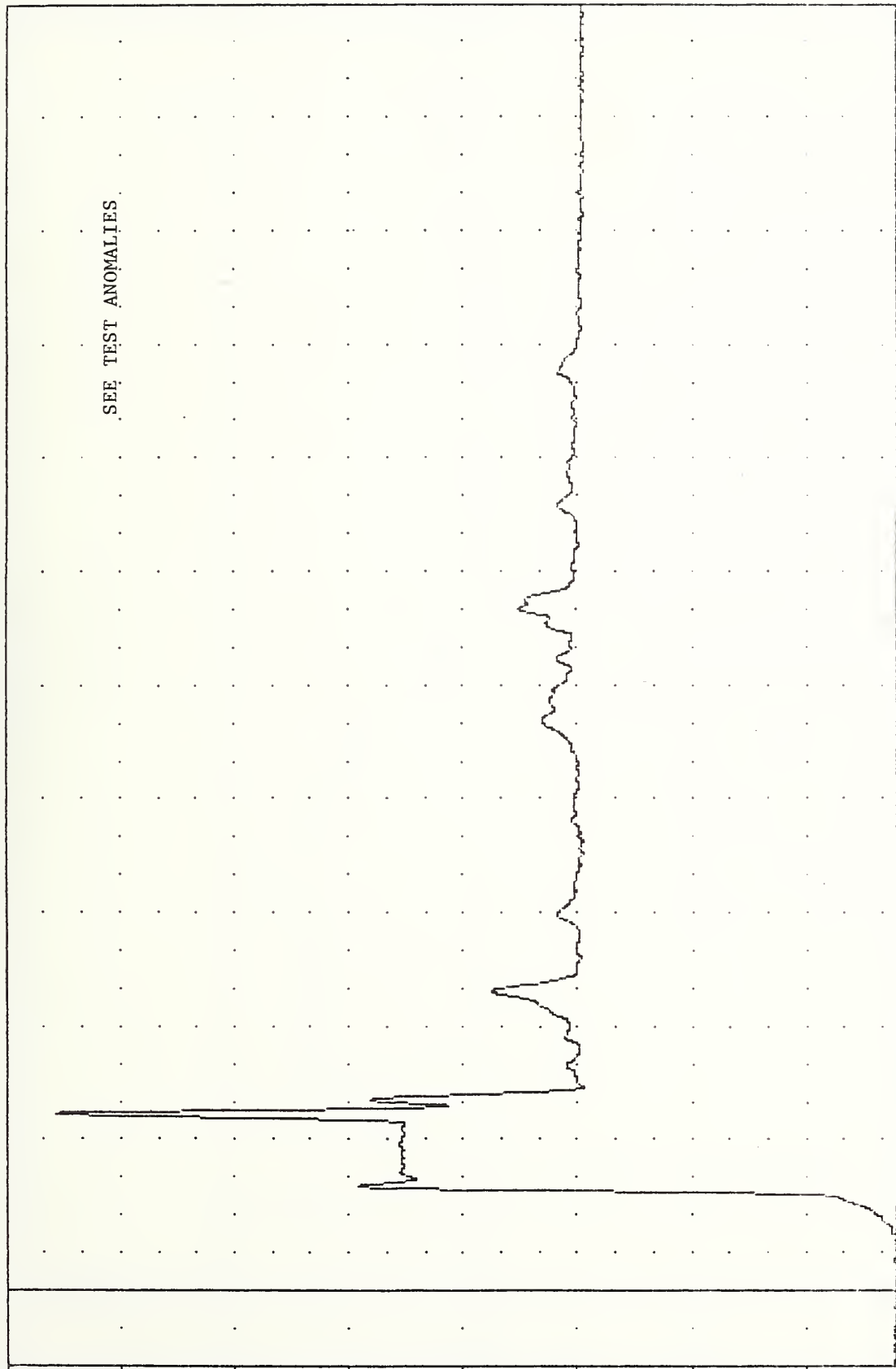
WRT , 851213  
SI PROTECTION PROD VEHICLE  
853470000000  
PEVRG1

PLOT DATE 19-DEC-85 08:58:52

FILTER = 8LFF 300/ -40

MIN. MAX VALUES = 0.058 -0.75 , 358.72 46.75

ACCELERATION (G)



SEE TEST ANOMALIES

-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
TIME (MSEC)

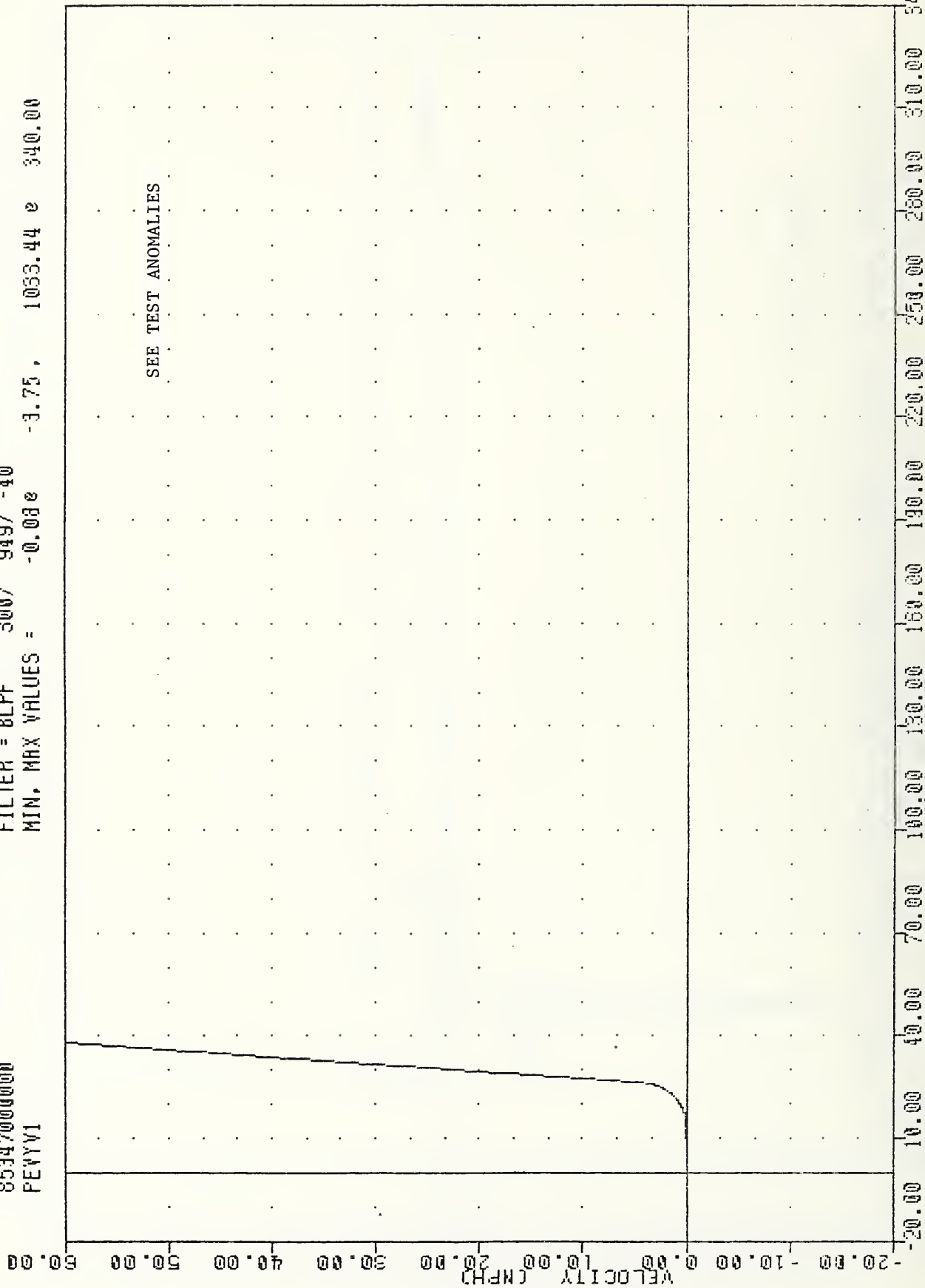
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
DRIVER PELVIS RESULTANT

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 PEVYV1

PLOT DATE 16-DEC-85 14:35:44

FILTER = 8LPF 500/ 949/ -40

MIN. MAX VALUES = -0.08e -3.75, 1033.44 e 340.00



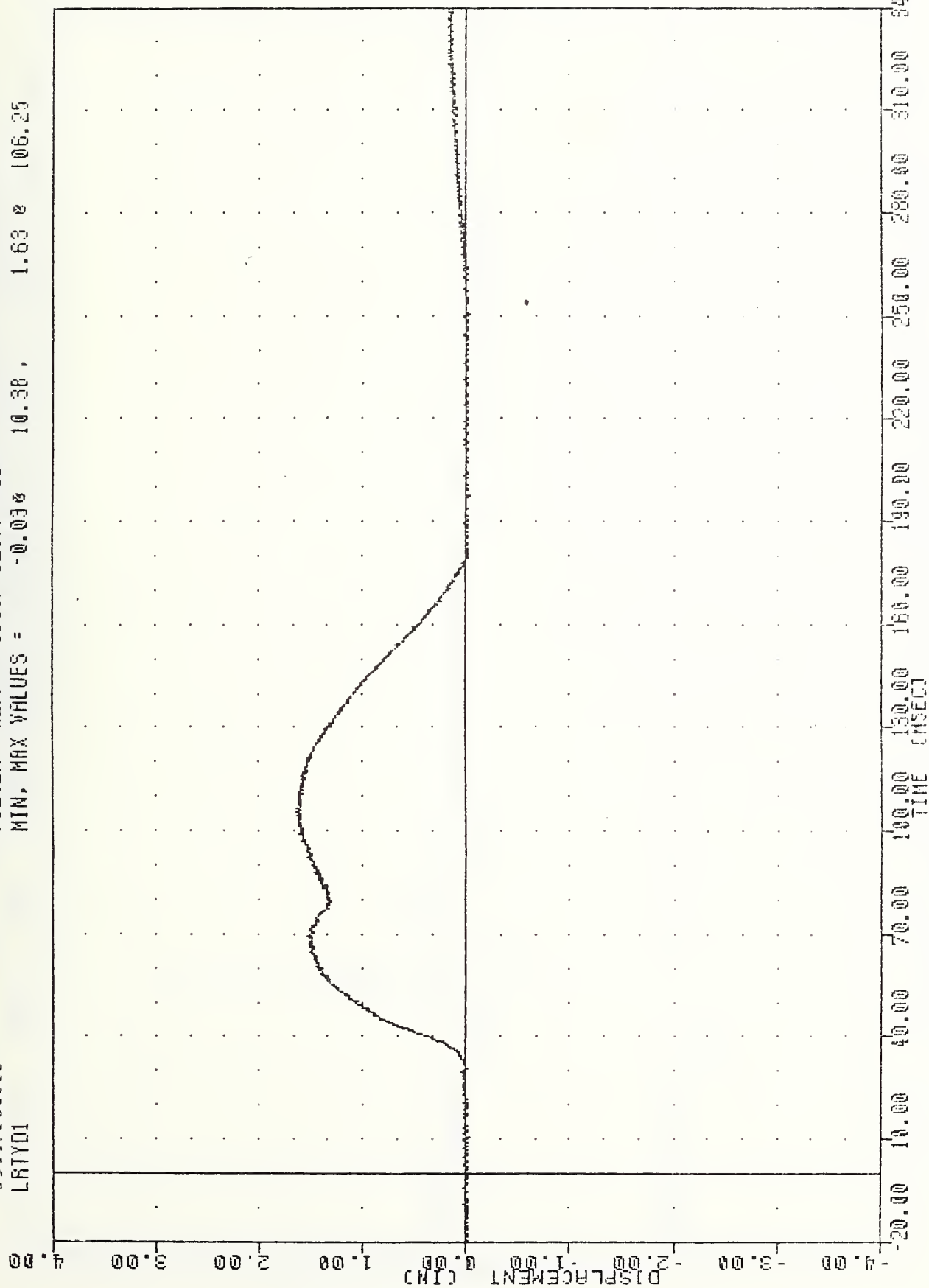
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING PEVYV1

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LRTYD1

PLOT DATE 18-DEC-85 14:35:44

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -0.038 10.38 , 1.63 106.25



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DRIVER LEFT RIB TO SPINE DISPLACEMENT INCHES

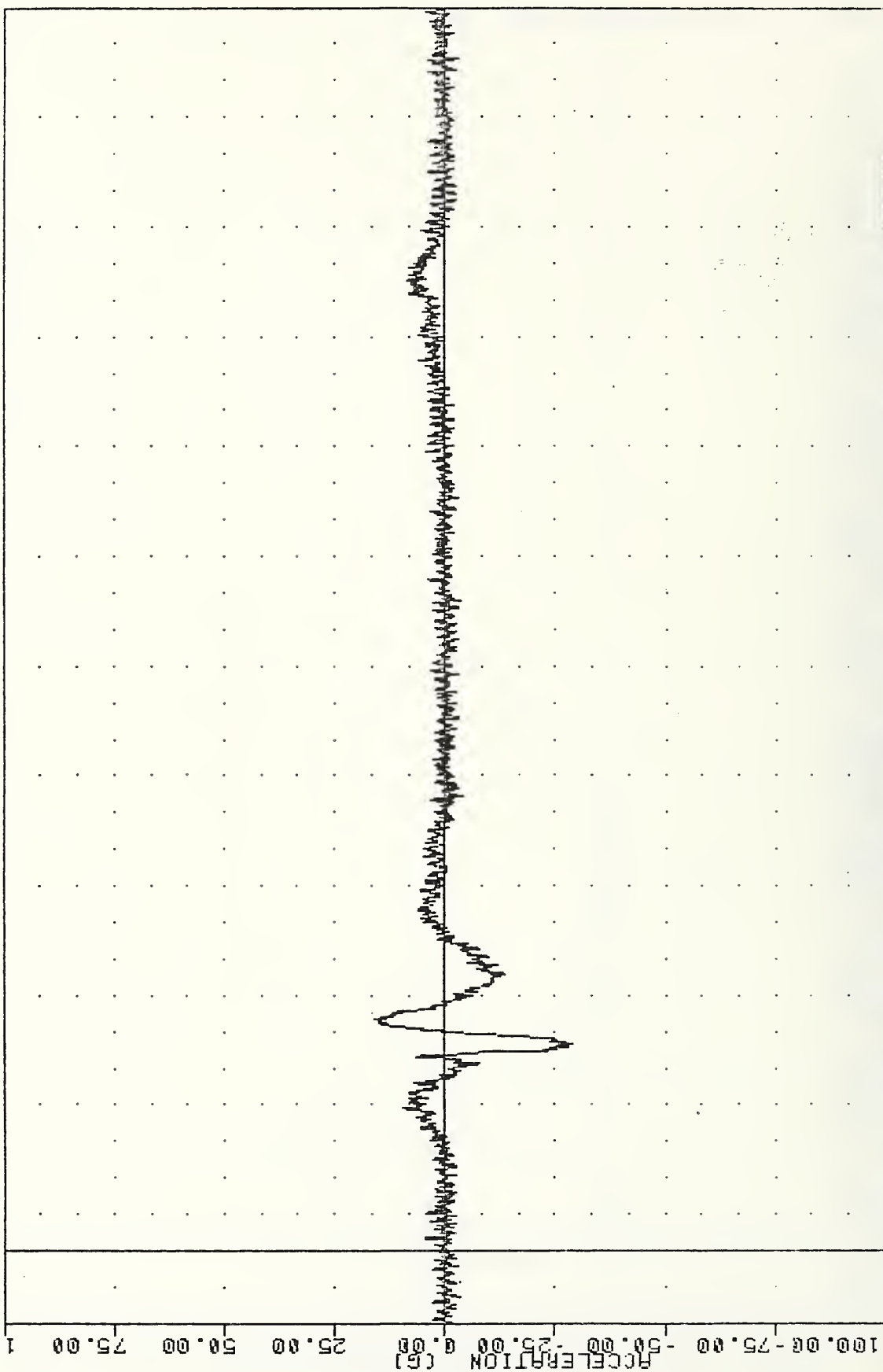
VAT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
HE0X64

PLOT DATE 18-DEC-85 14:35:44

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -29.190 56.75, 15.88 0 53.53

100.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
PASSENGER HEAD ACCELERATION X AXIS

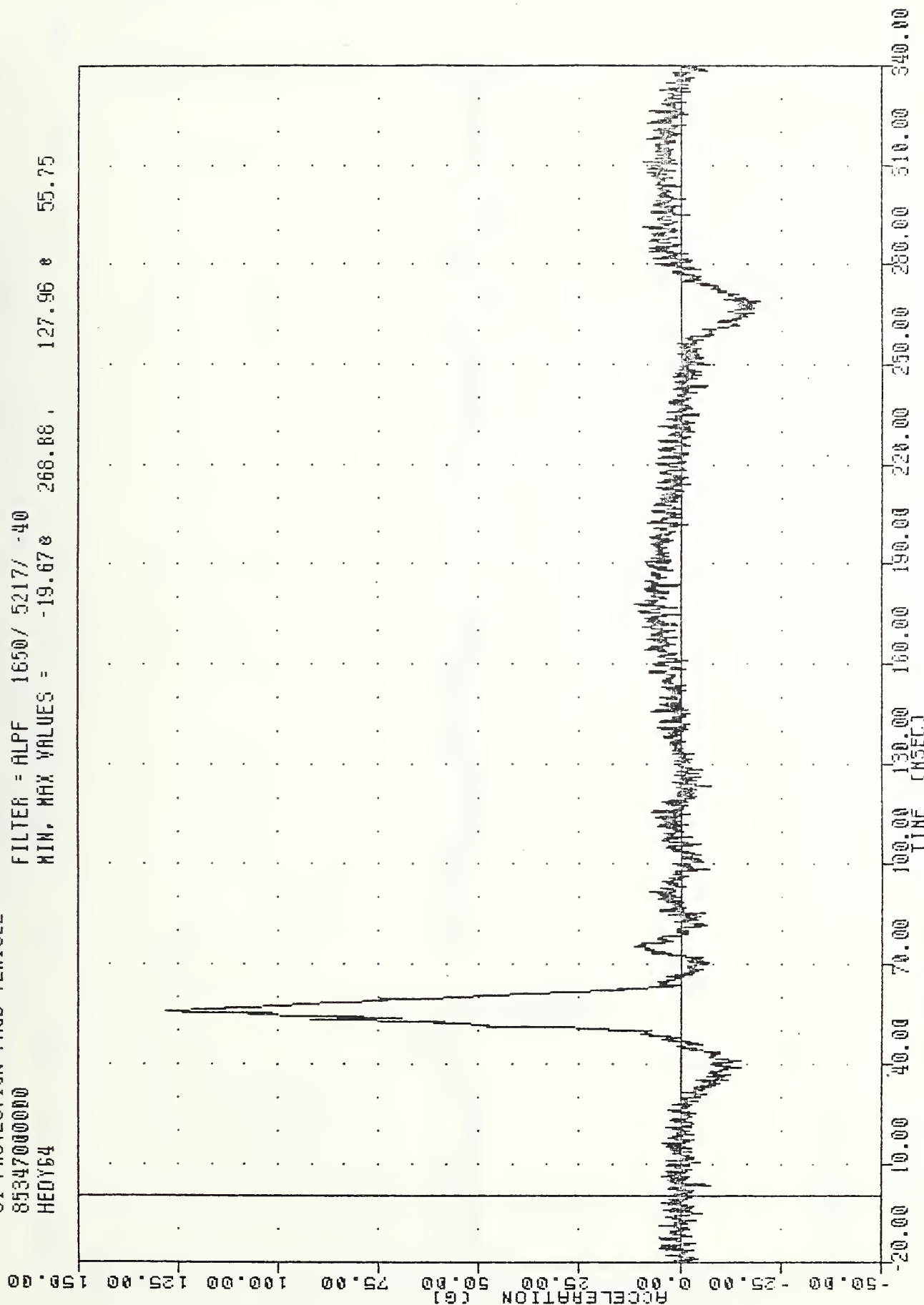


VRT , 851213  
SI PROTECTION PROD VEHICLE  
853470000000  
HEDY64

PLOT DATE 18-DEC-85 14:35:44

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -19.67 g 127.96 g 55.25



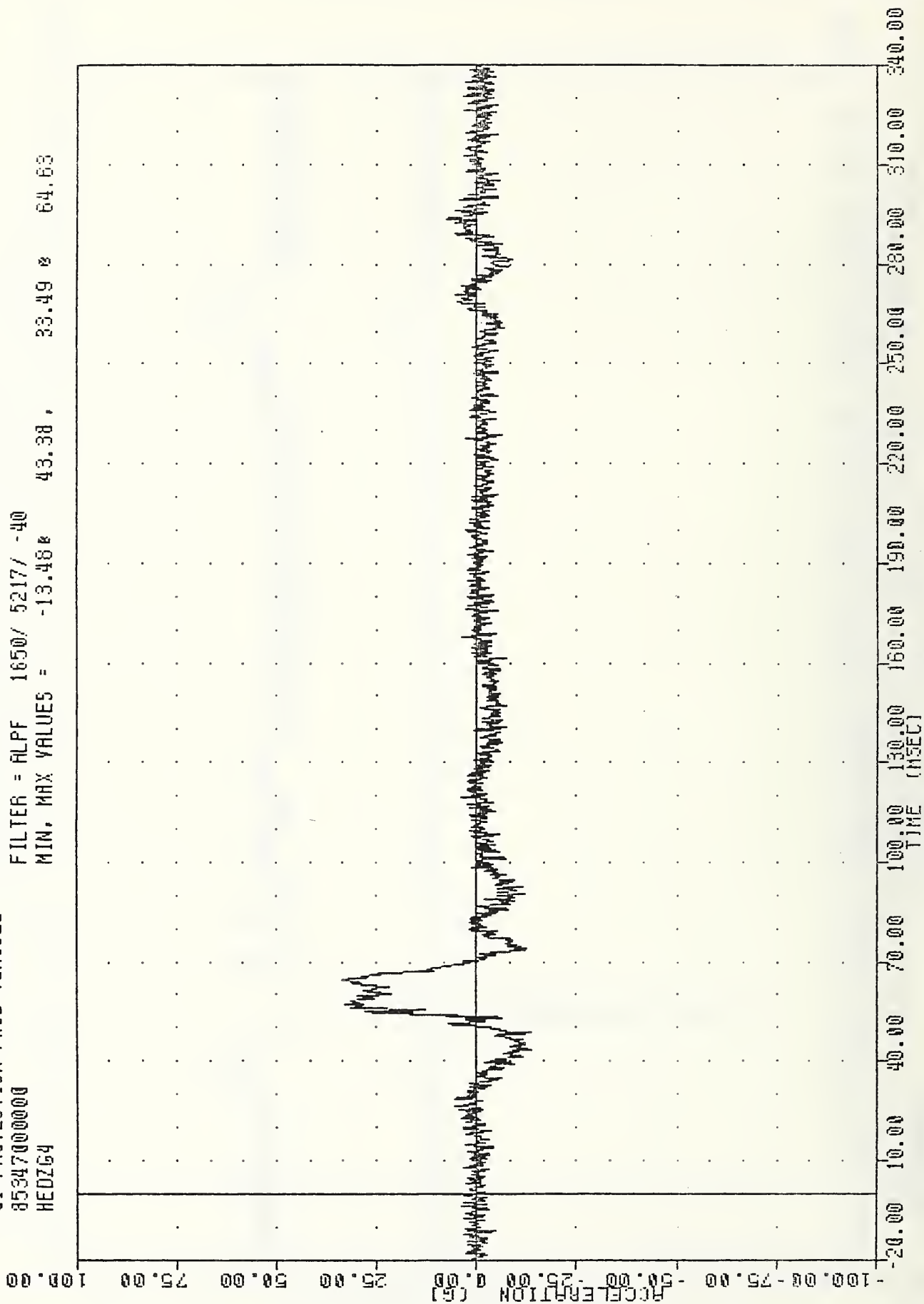
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
PASSENGER HEAD ACCELERATION Y AXIS

VRT , 851213  
SI PROTECTION PASO VEHICLE  
85347000000  
HEDZG4

PLOT DATE 18-DEC-85 14:35:44

FILTER = ALPF 1650/ 5217/ -40

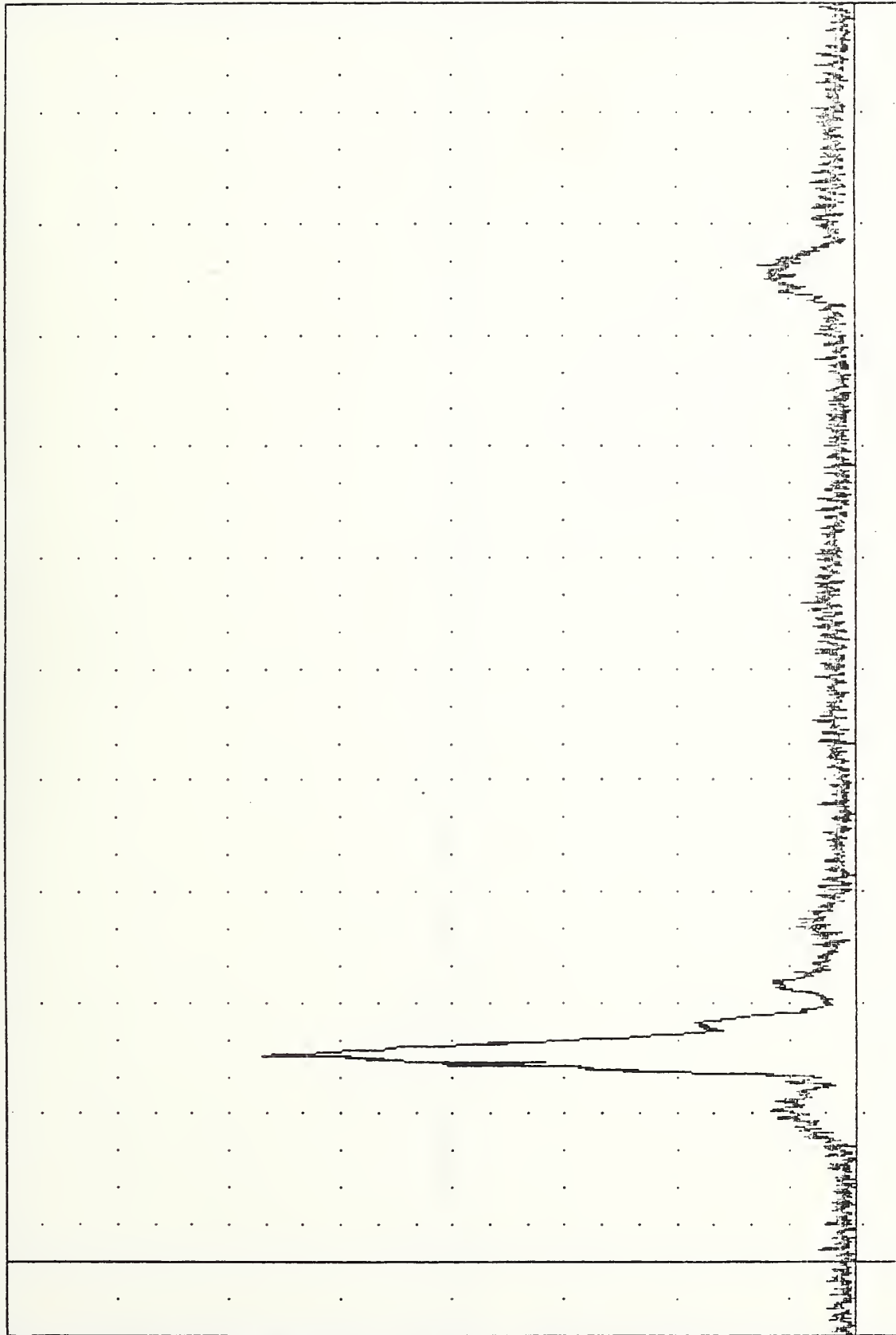
MIN, MAX VALUES = -13.48 43.38 , 33.49 64.63



VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 HEAD64

PLOT DATE 18-DEC-85 14:35:44  
 FILTER = ALPF 1650/ 5217/ -40  
 MIN. MAX VALUES = 0.37e 27.75. 132.40 e 55.75

ACCELERATION (G)



TIME (msec)

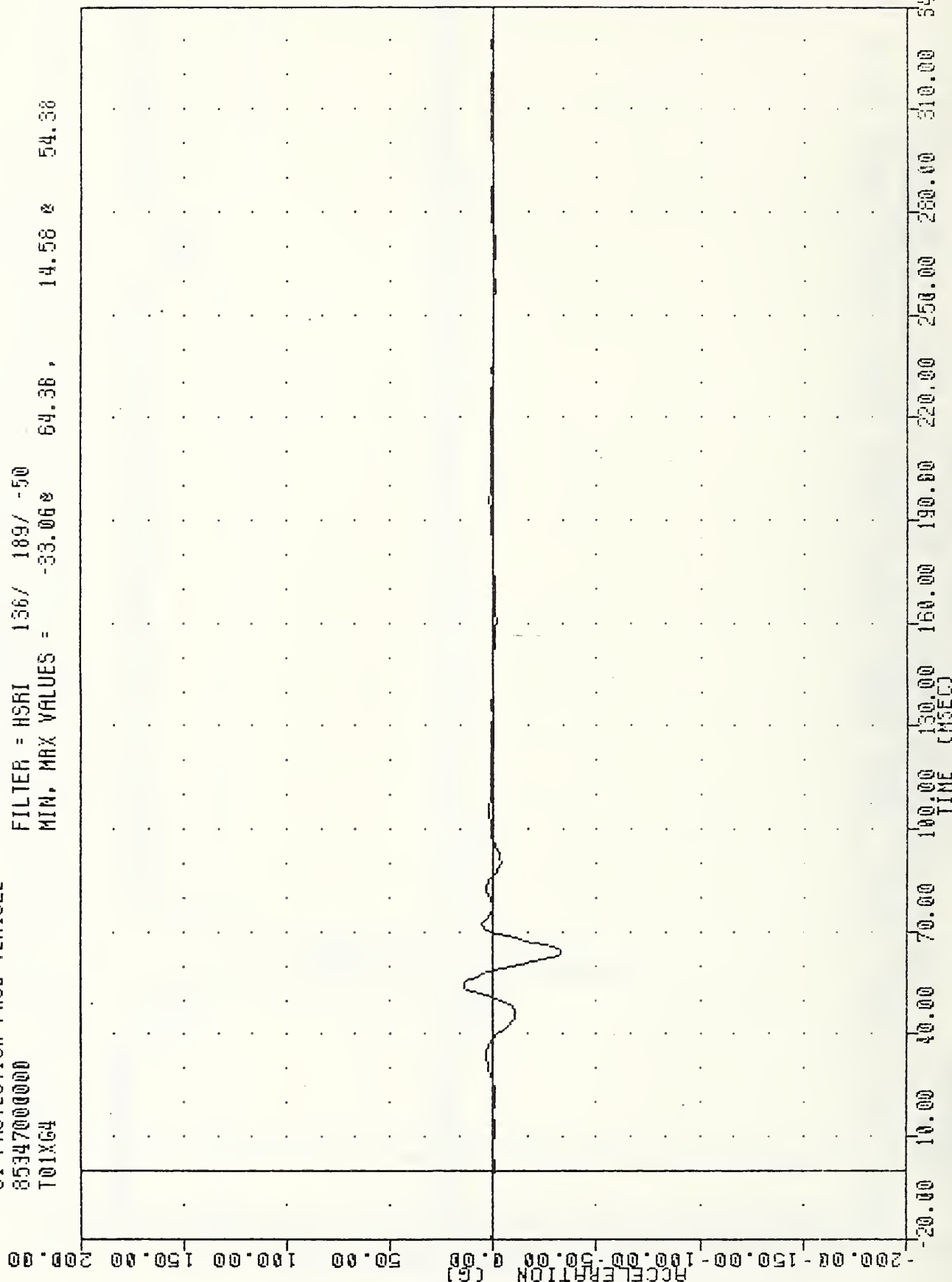
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER HEAD RESULTANT

VR1 , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01XG4

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 156/ 189/ -50

MIN. MAX VALUES = -33.06 64.36 , 14.58 54.38



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER UPPER SPINE ACCELERATION X AXIS



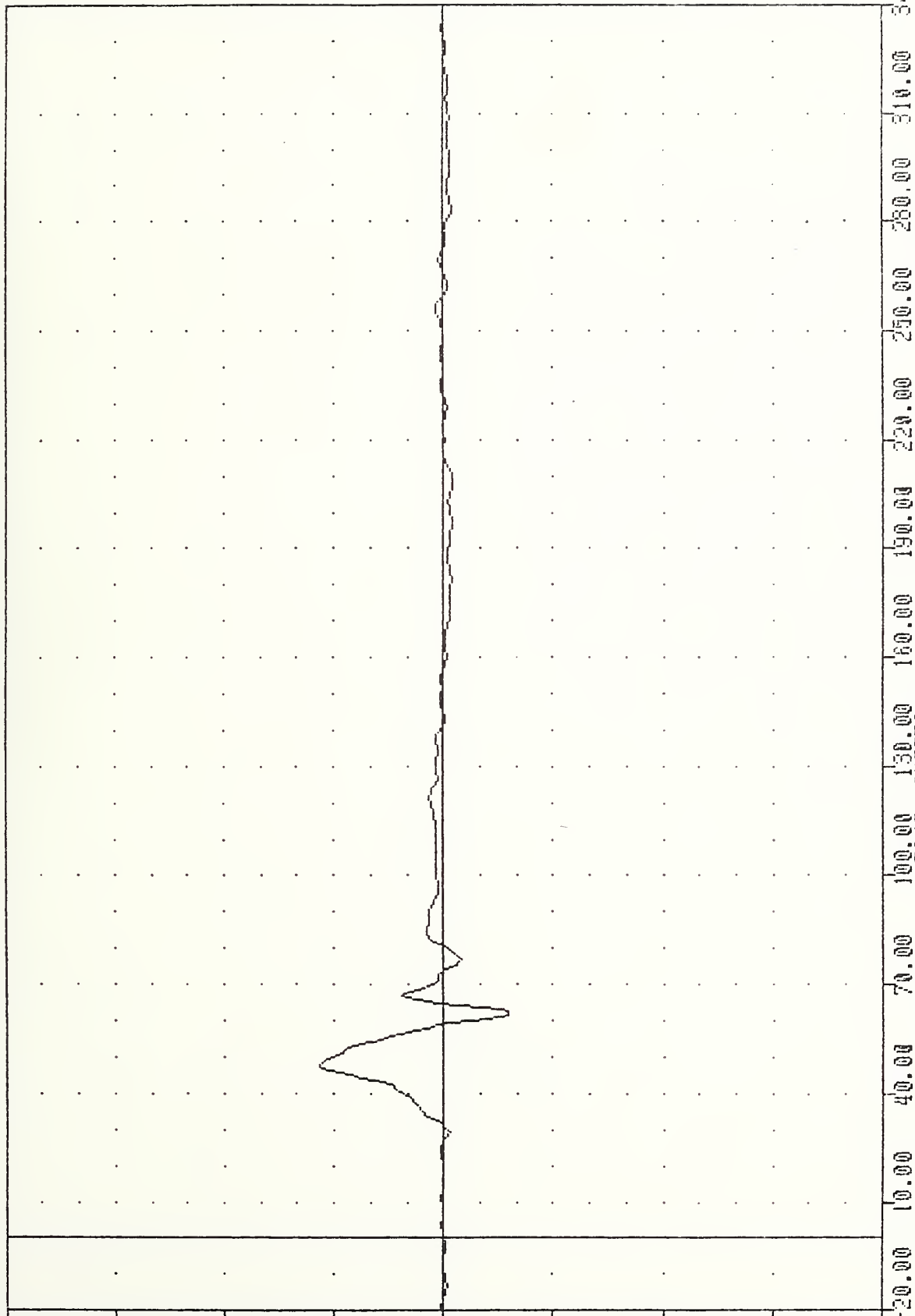
VRT , 851213  
SI PROTECTION PASO VEHICLE  
85347000000  
T01Y64

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -29.67g 61.67 , 56.70 g 47.50

ACCELERATION (G)



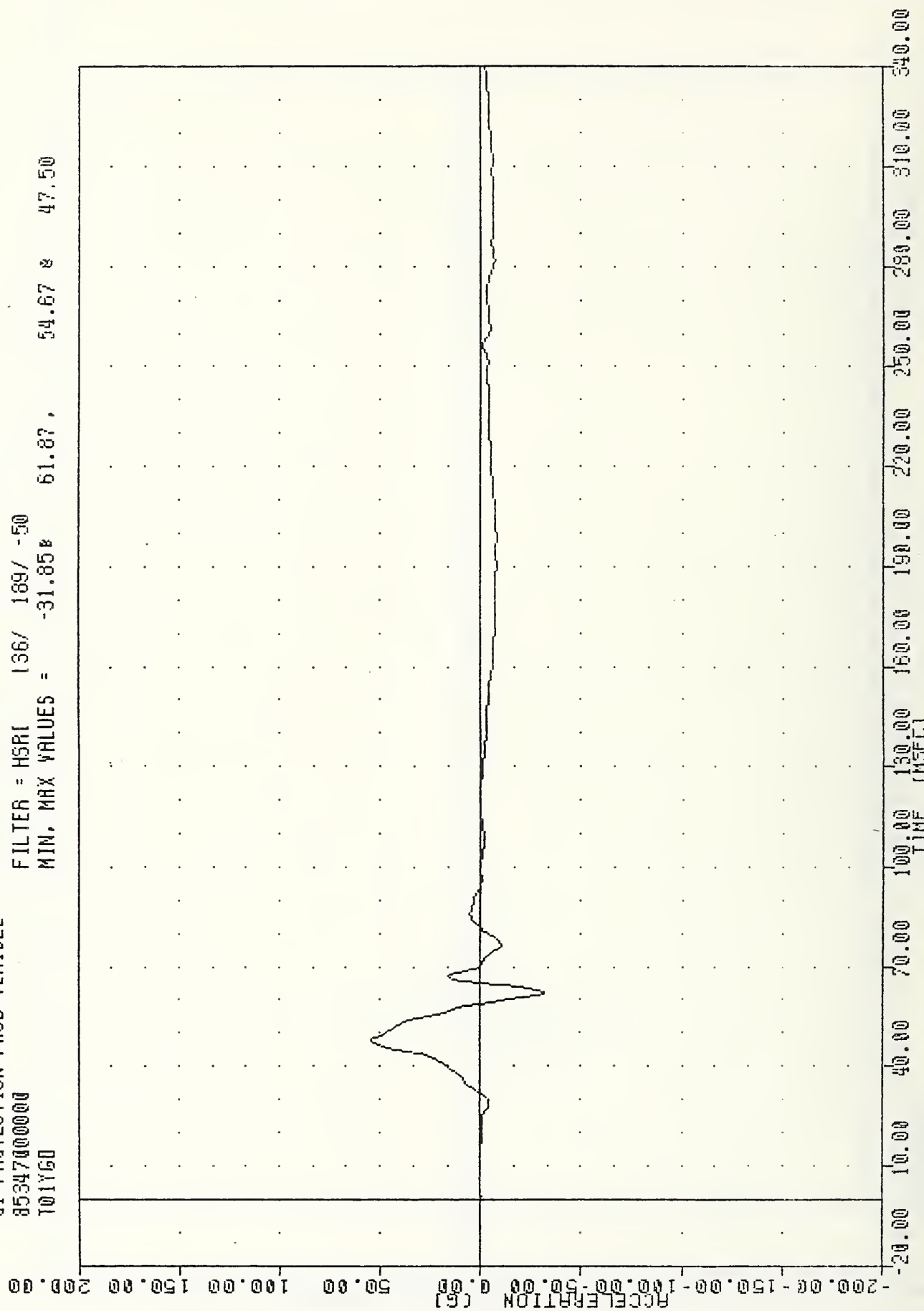
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
PASSENGER UPPER SPINE ACCELERATION Y AXIS

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01Y60

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -31.85% 61.87, 54.67 & 47.50



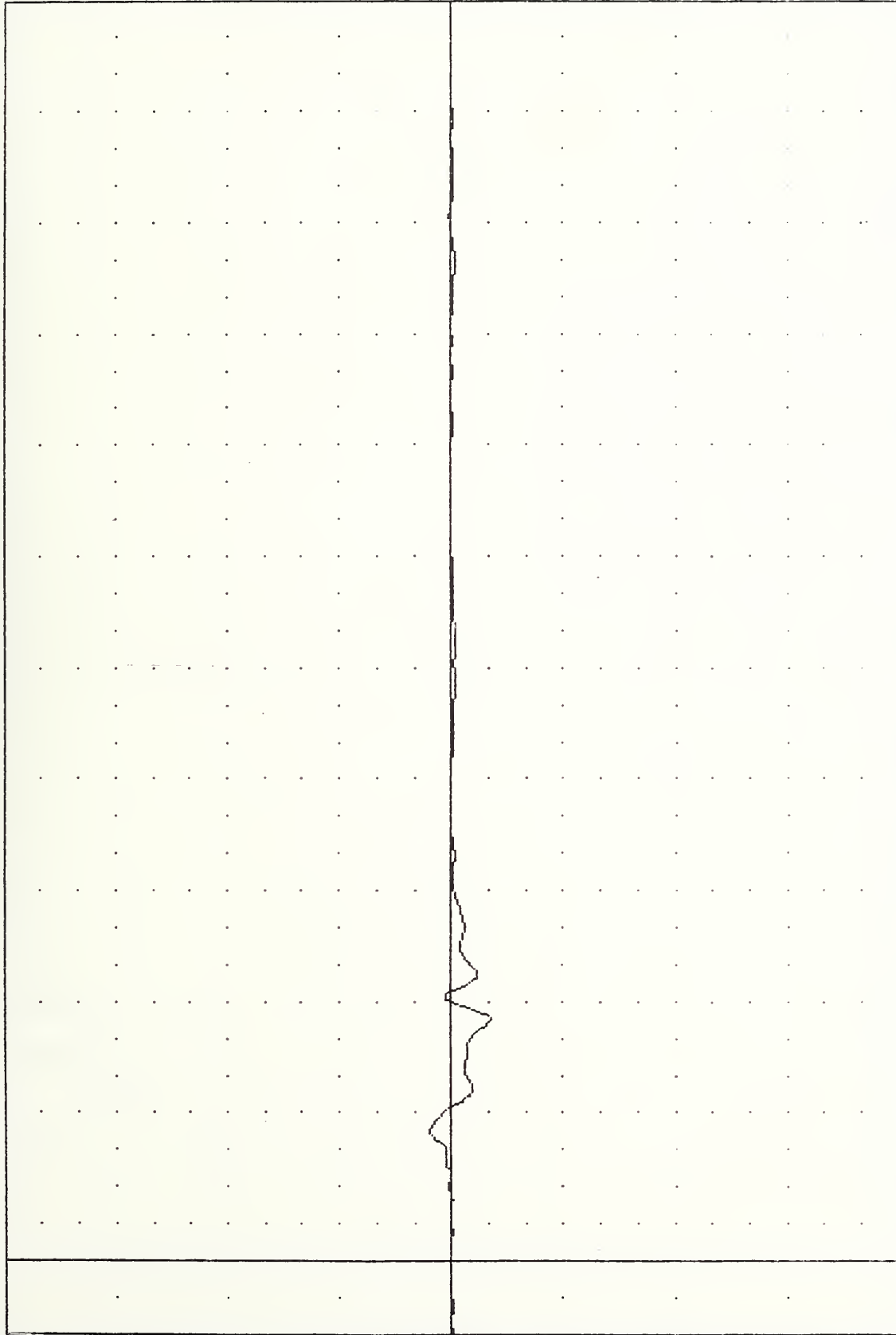
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER UPPER SPINE ACCELERATION -2 Y AXIS

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01Z64

PLOT DATE 18-DEC-85 14:36:47  
 FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -17.69 65.00

9.60 8 35.00

ACCELERATION [G]  
 -200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
 TIME (MSEC)

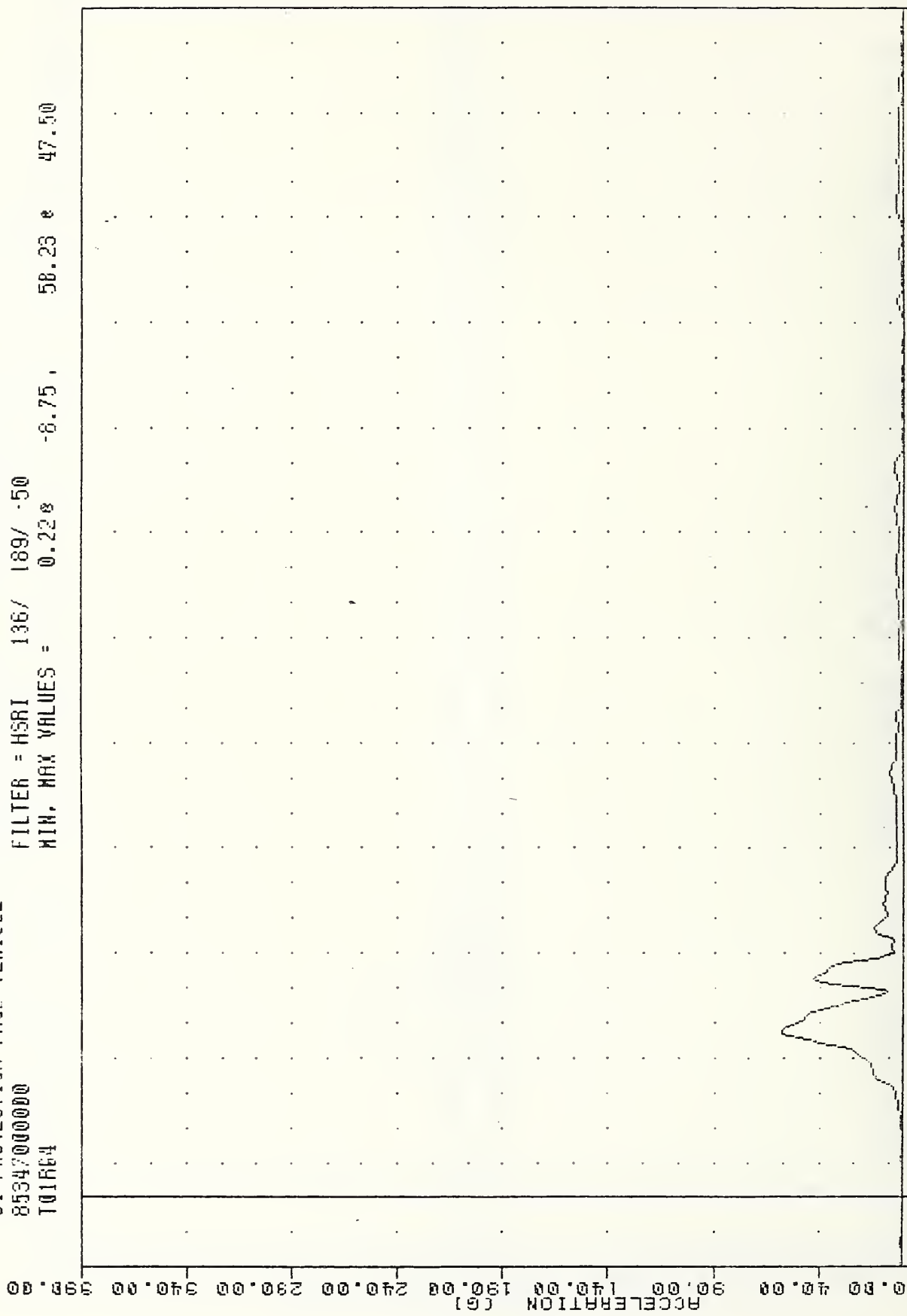
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER UPPER SPINE ACCELERATION Z AXIS

VAT , 851213  
 SI PROTECTION PHOD VEHICLE  
 853470000000  
 T01R64

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.22g -8.75 , 58.23 g 47.50



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
 TIME (msec)  
 MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER UPPER SPINE RESULTANT



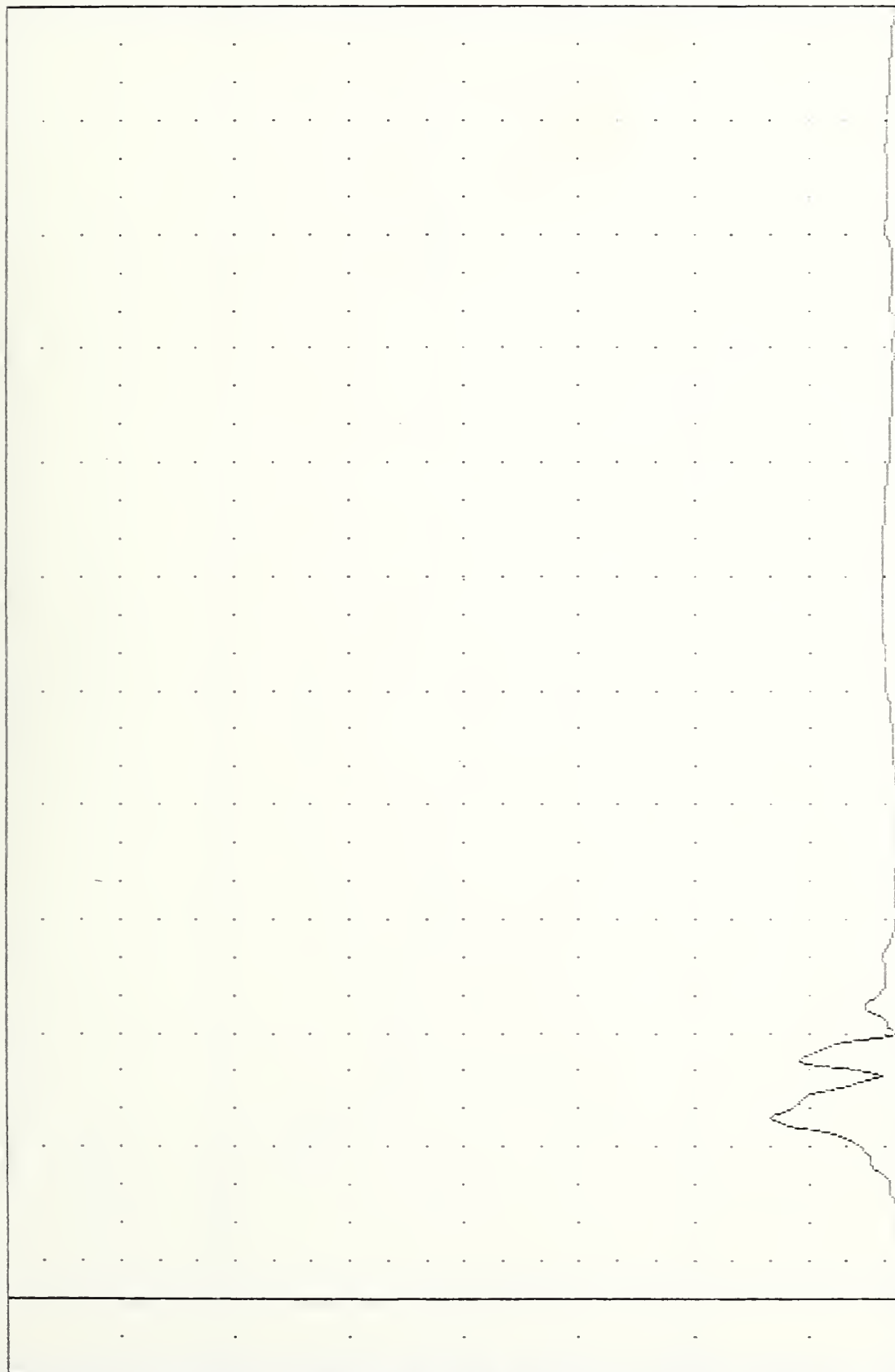
WRT , 851213  
 SI PROTECTION PHOD VEHICLE  
 85347000000  
 T01R60

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.11e -3.13, 56.25 e 47.50

ACCELERATION (G)



20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

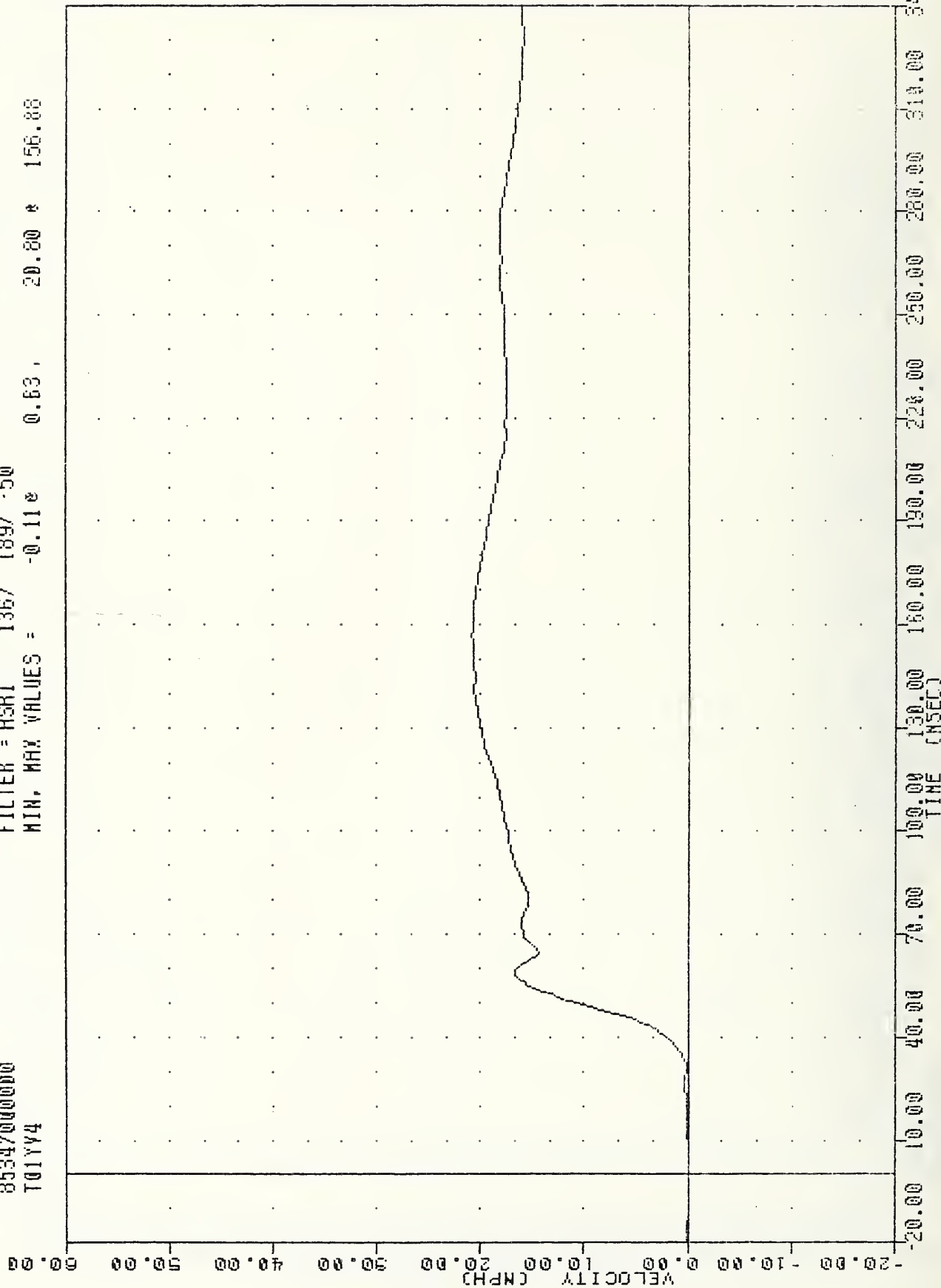
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER UPPER SPINE RESULTANT USING T01Y60

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01YV4

PLOT DATE 19-DEC-85 14:41:31

FILTER = H3R1 136/ 189/ -50

MIN, MAX VALUES = -0.11e 0.63, 20.80 \* 156.88



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING T01YV4

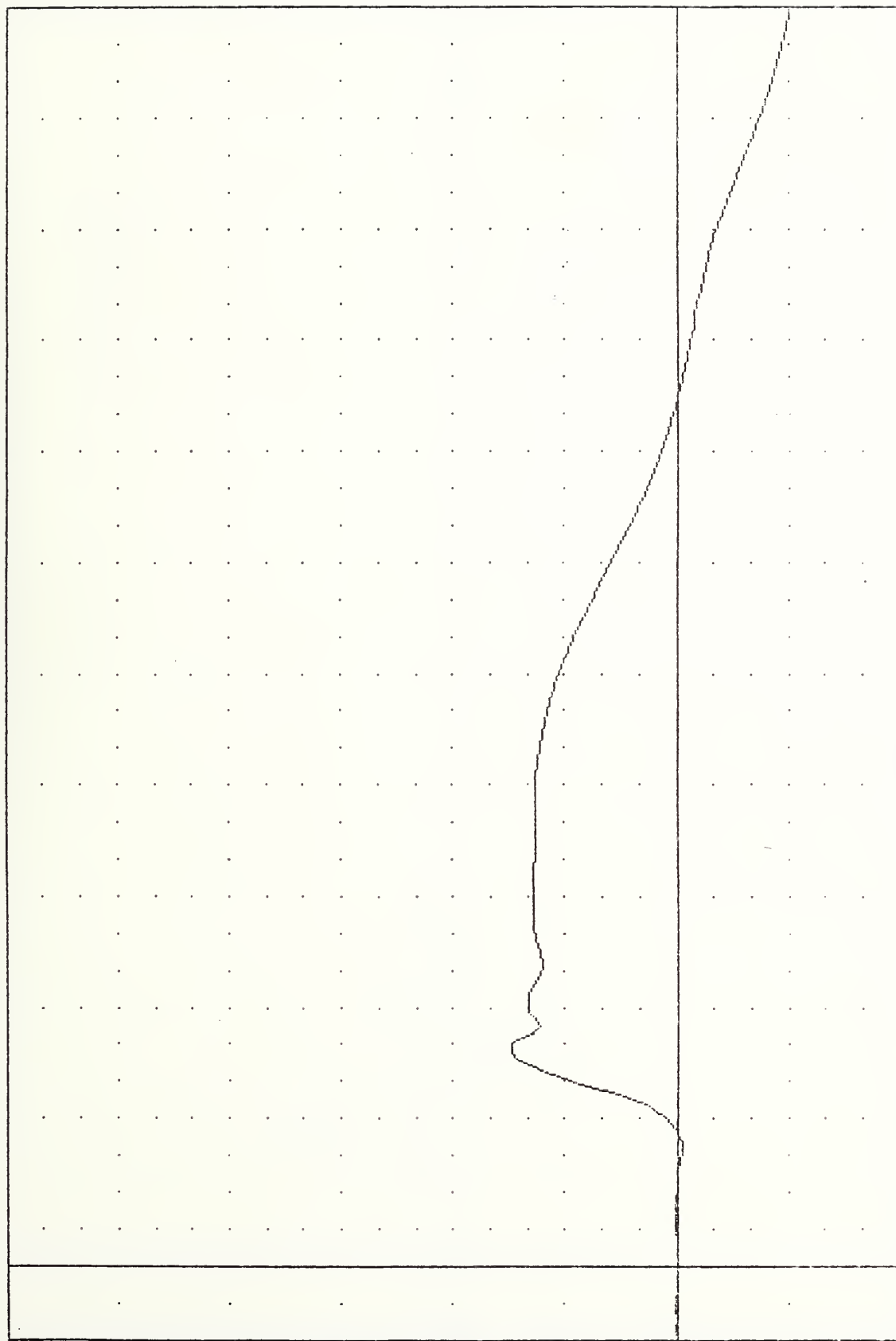
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T01YV0

PLOT DATE 19-DEC-85 14:41:31

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -10.14e 340.00, 14.84 e 58.75

VELOCITY (MPH)



-20.00 -10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

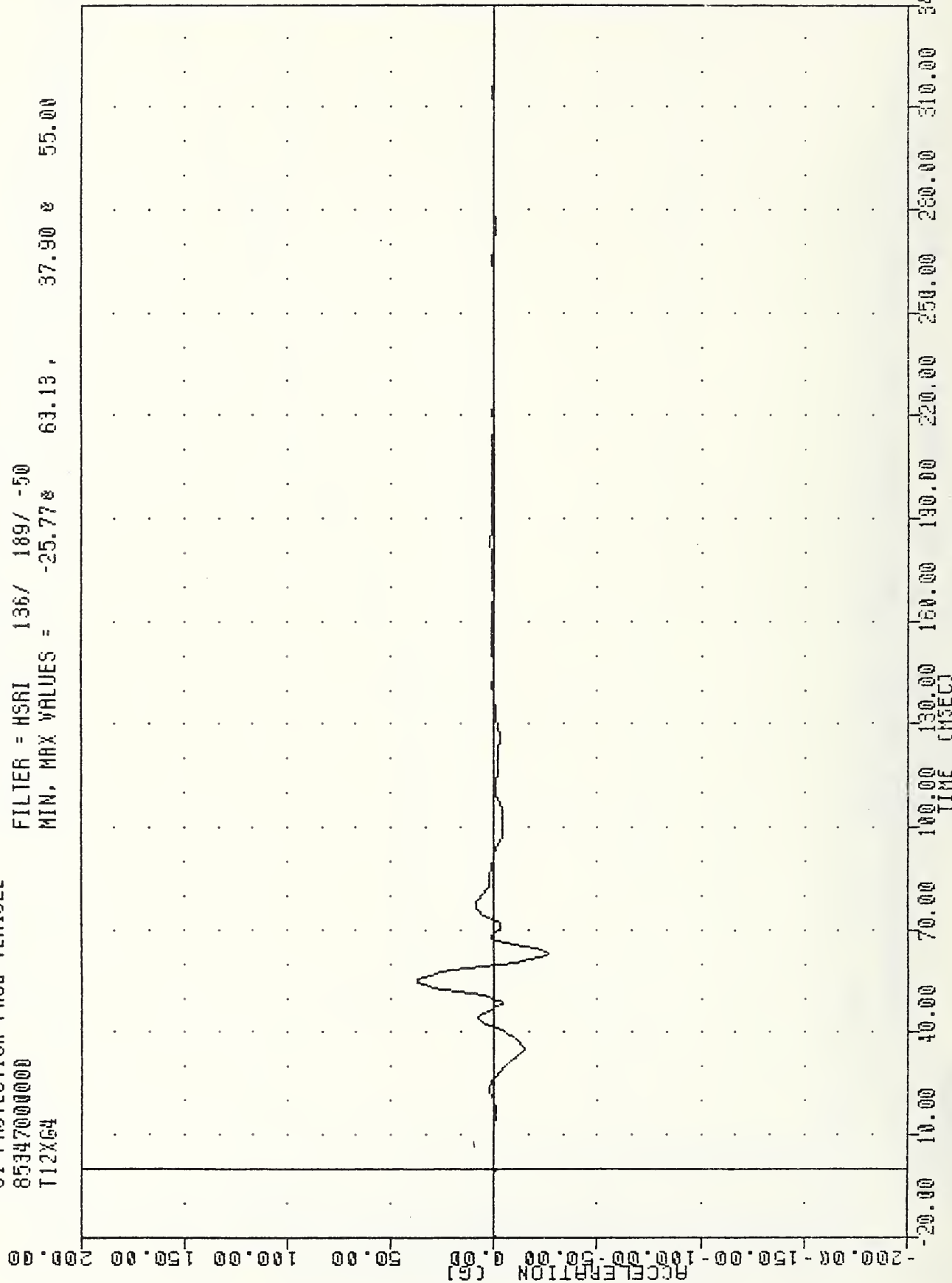
DELTA V USING T01YGO

VRI , 851213  
 SI PROTECTION FROM VEHICLE  
 85347000000  
 T12XG4

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -25.77% 63.13 , 37.90 & 55.00



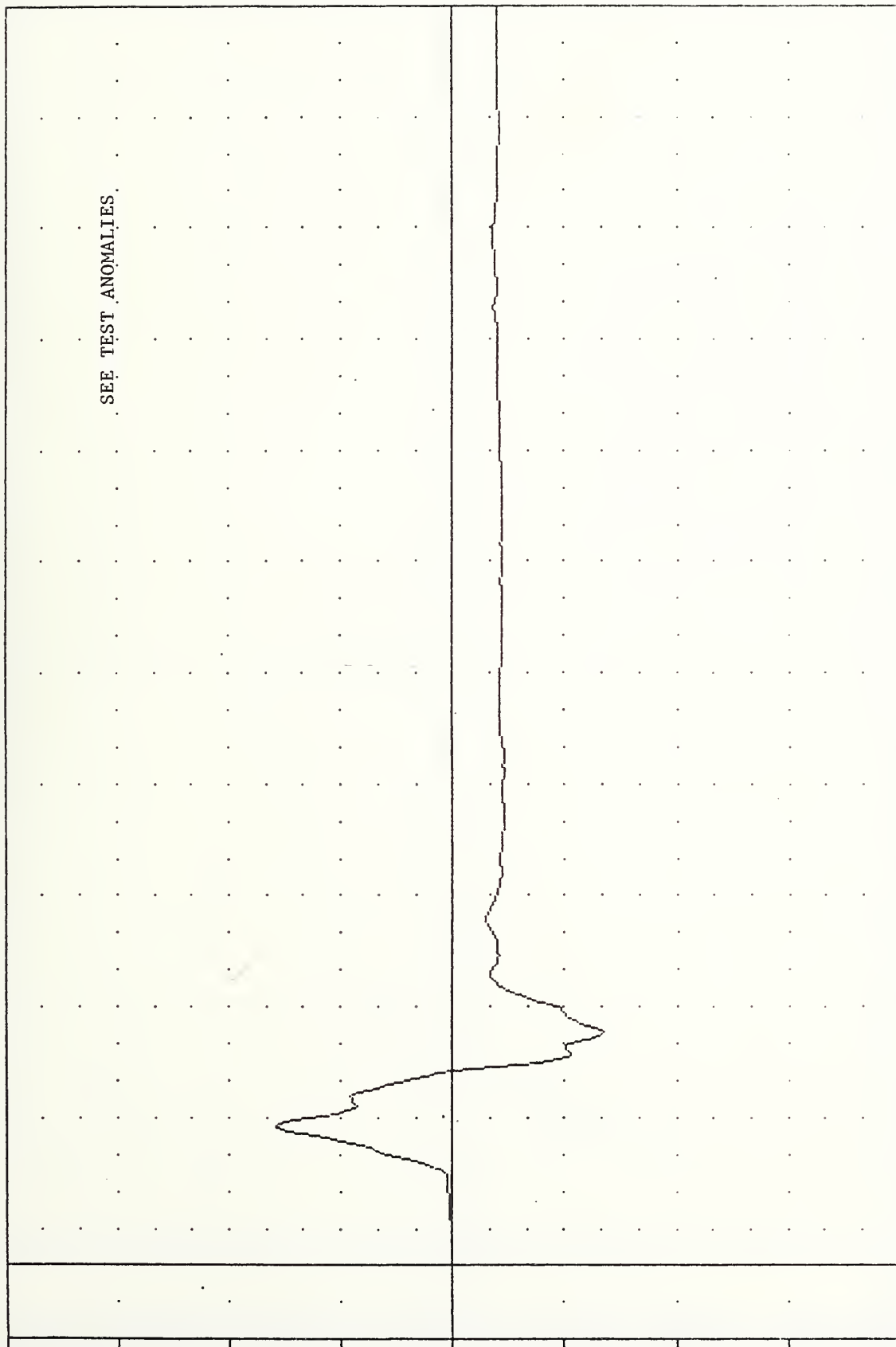
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER LOWER SPINE ACCELERATION X AXIS

VAT 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T12Y64

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -67.13e 63.13, 78.44 e 37.50

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
 TIME (msec)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER LOWER SPINE ACCELERATION Y AXIS

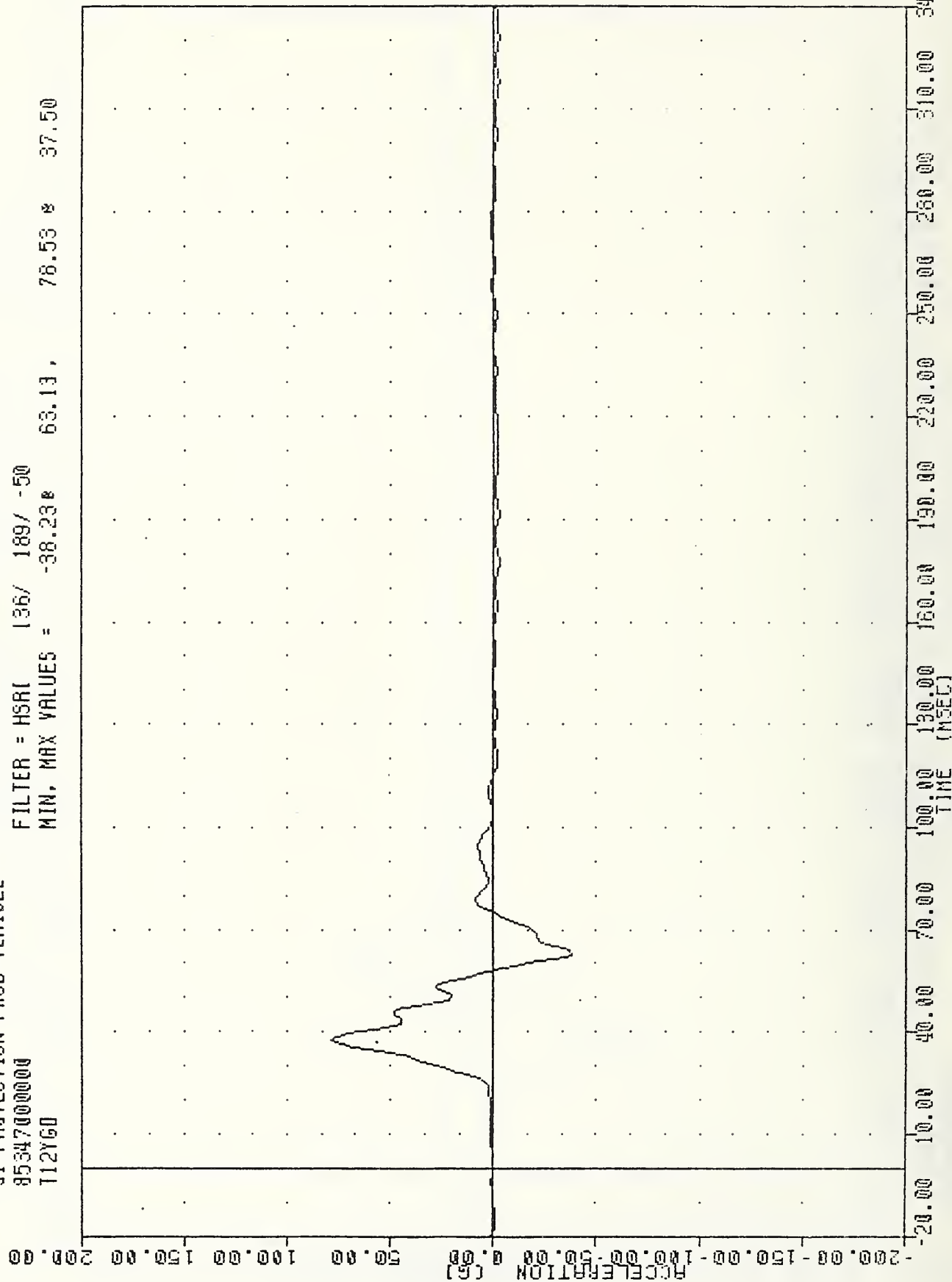


VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 112Y60

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSR( 136/ 189/ -50

MIN. MAX VALUES = -38.23 63.13, 78.53 37.50

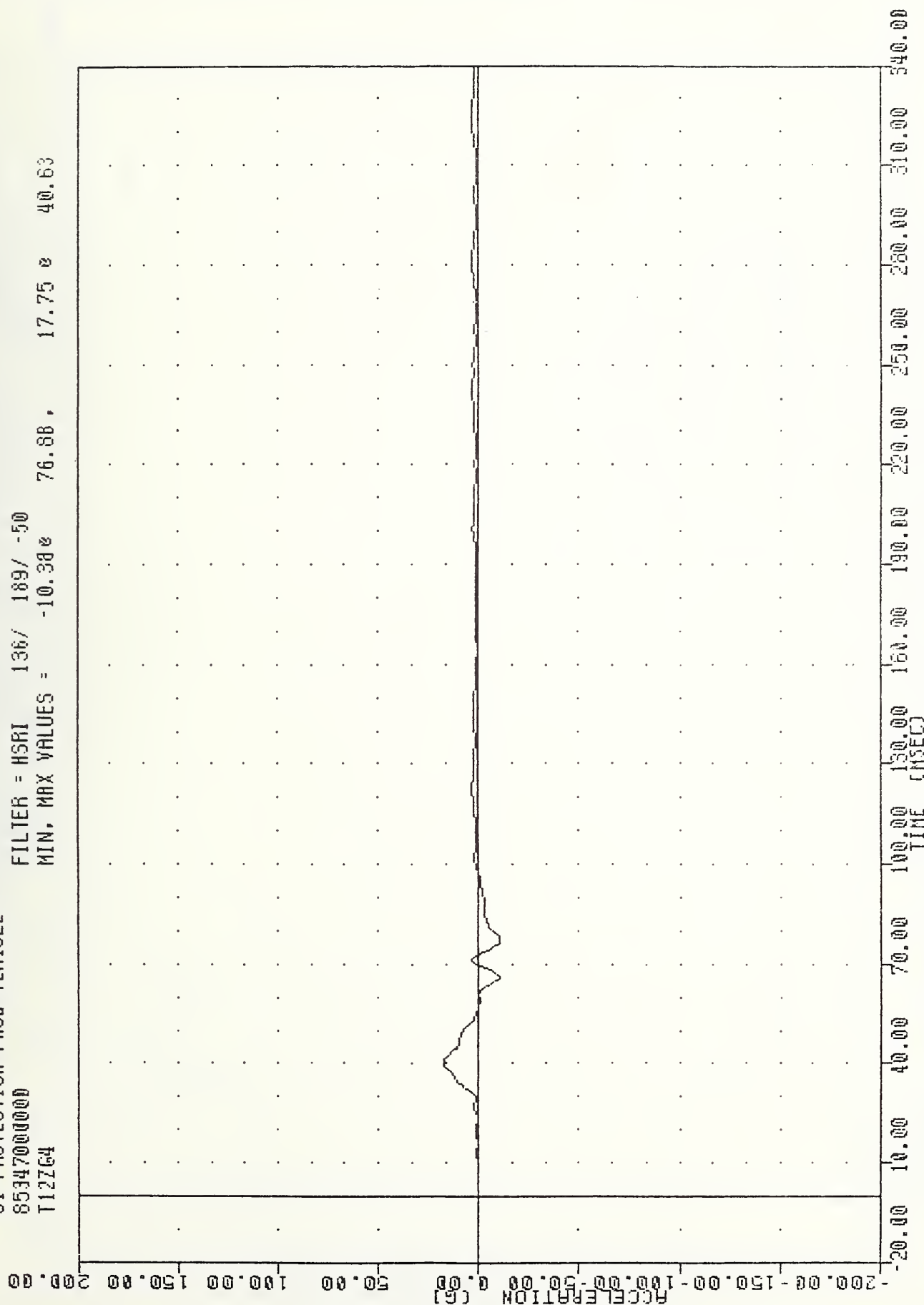


MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER LOWER SPINE ACCELERATION -2 Y AXIS

VRT , 851213  
 SI PROTECTION PASS VEHICLE  
 85347000000  
 T12764

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50  
 MIN, MAX VALUES = -10.38e 76.88, 17.75 e 40.63



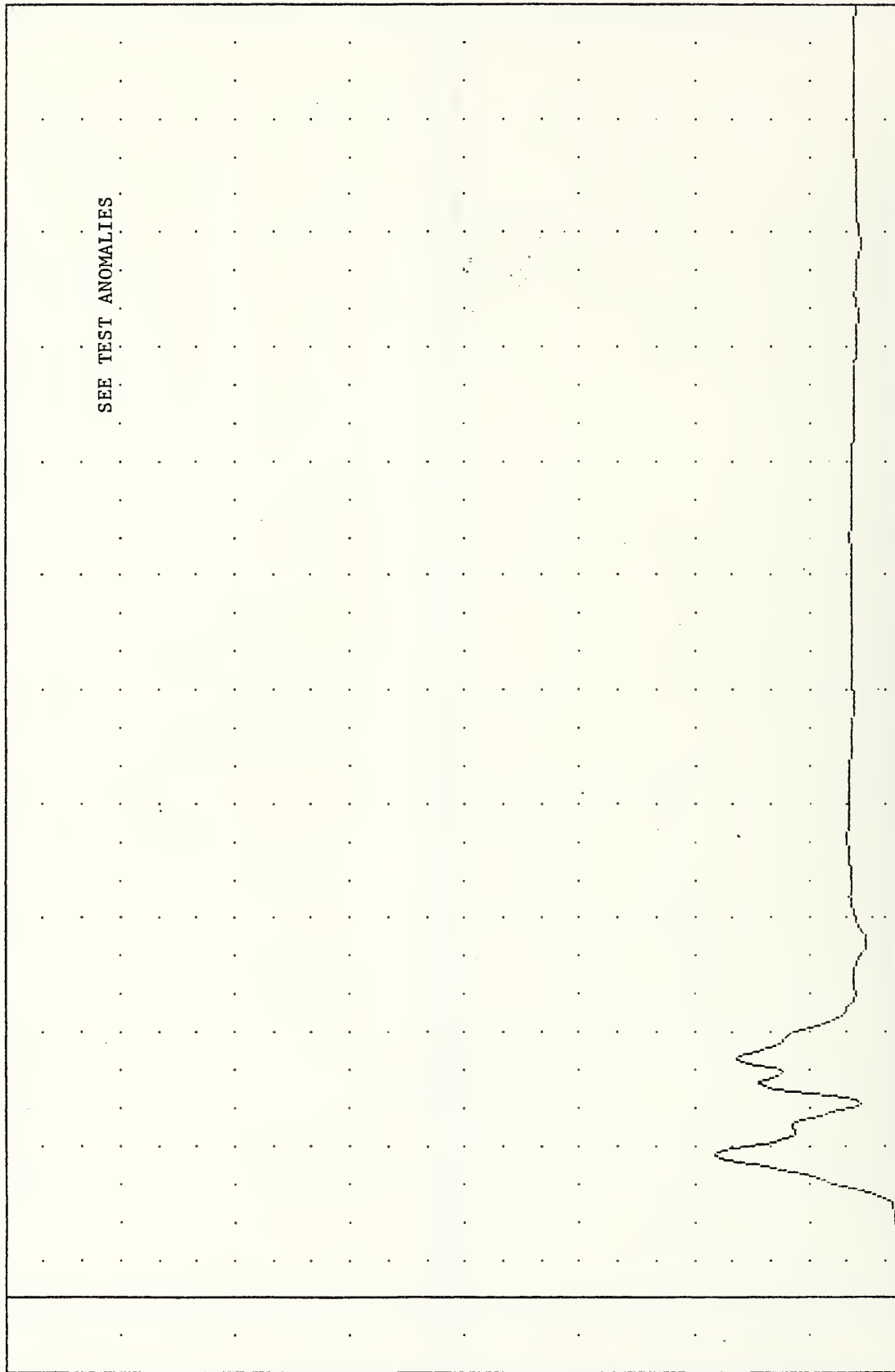
VAT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T12R64

PLOT DATE 18-DEC-65 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.05e -6.25 , 80.54 e 37.50

ACCELERATION (G)



SEE TEST ANOMALIES

-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

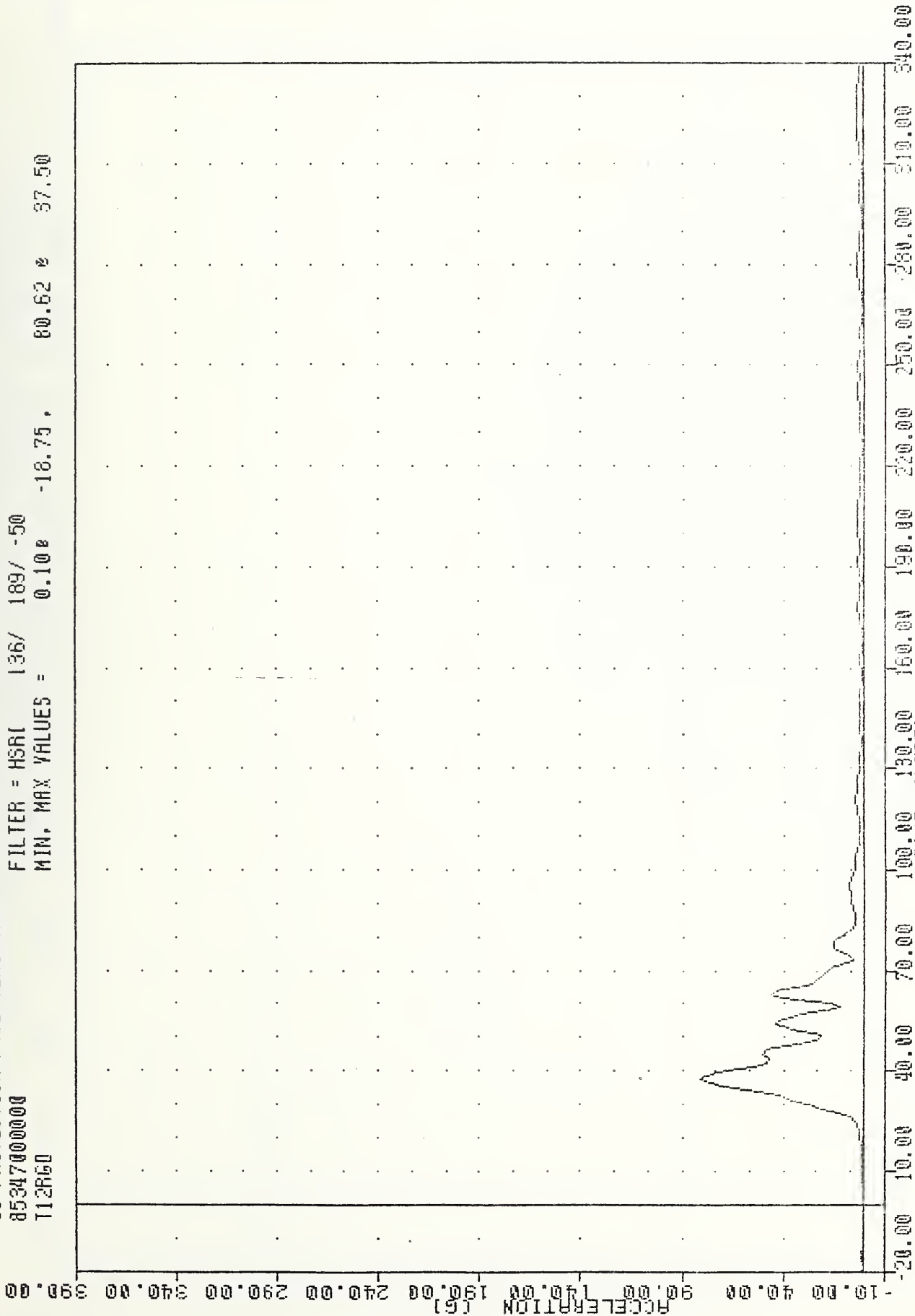
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER LOWER SPINE RESULTANT

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T12R60

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSR( 136/ 189/ -50

MIN. MAX VALUES = 0.10e -18.75, 80.62 e 37.50



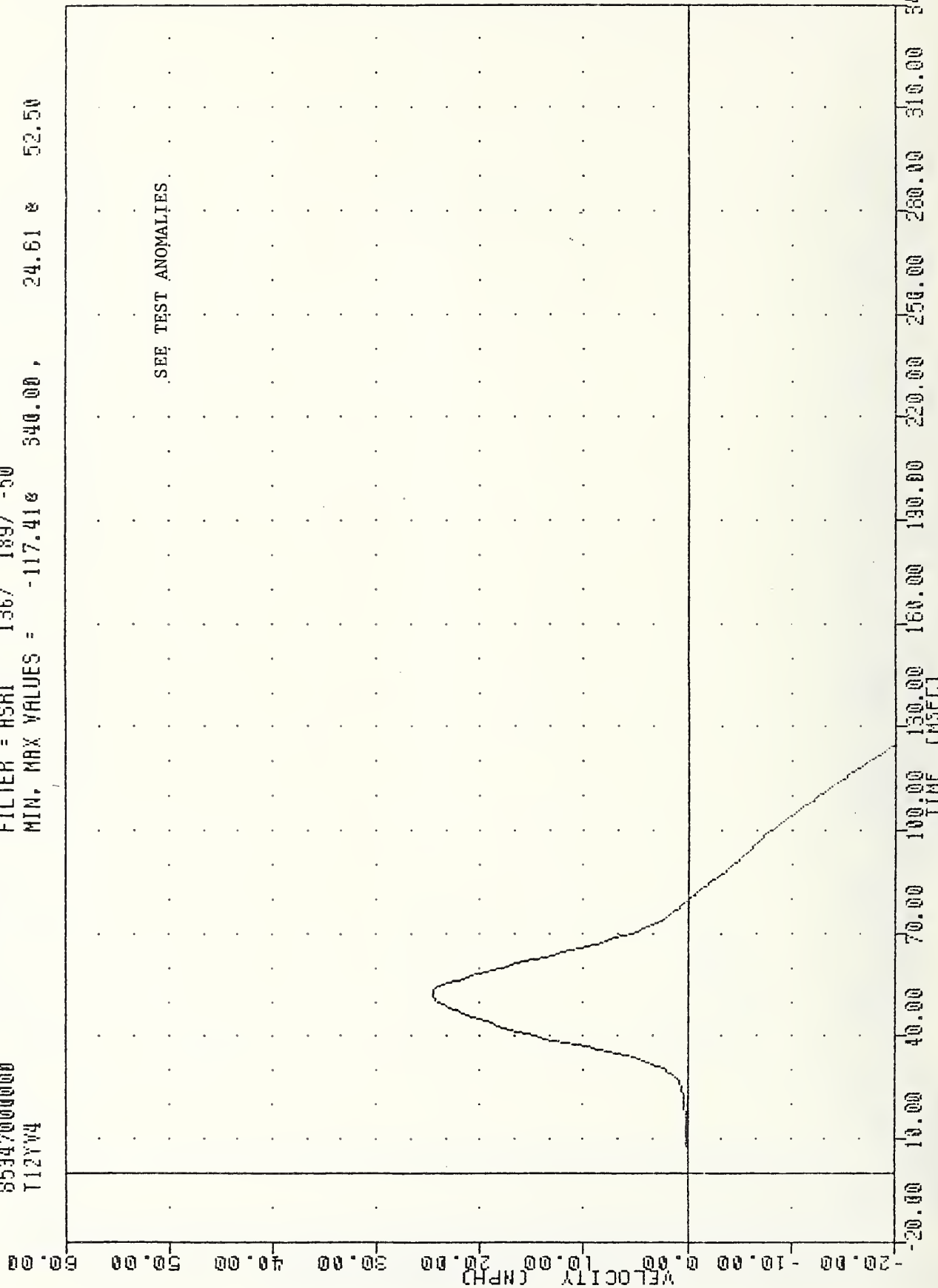
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER LOWER SPINE RESULTANT USING T12Y60

VRT , 851213  
 SI PROTECTION PASS VEHICLE  
 85347000000  
 T12YV4

PLOT DATE 19-DEC-85 14:41:31

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -117.416 340.00, 24.61 52.50

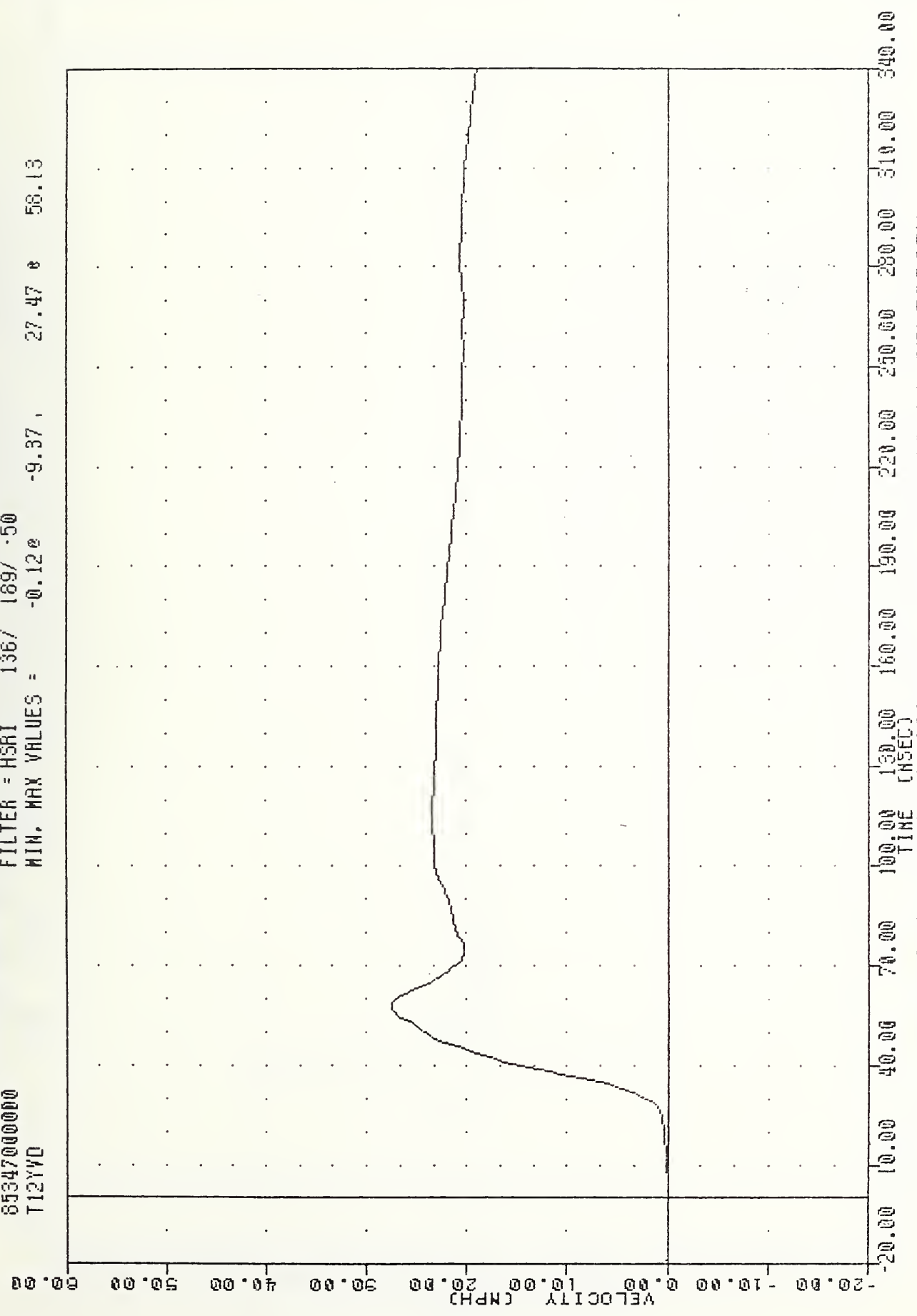


MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING T12YV4



VAT 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 T12YWD

PLOT DATE 19-DEC-85 14:41:31  
 FILTER = HSRI 136/ 169/ -50  
 MIN. MAX VALUES = -0.12 27.47 58.13



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING T12YGD

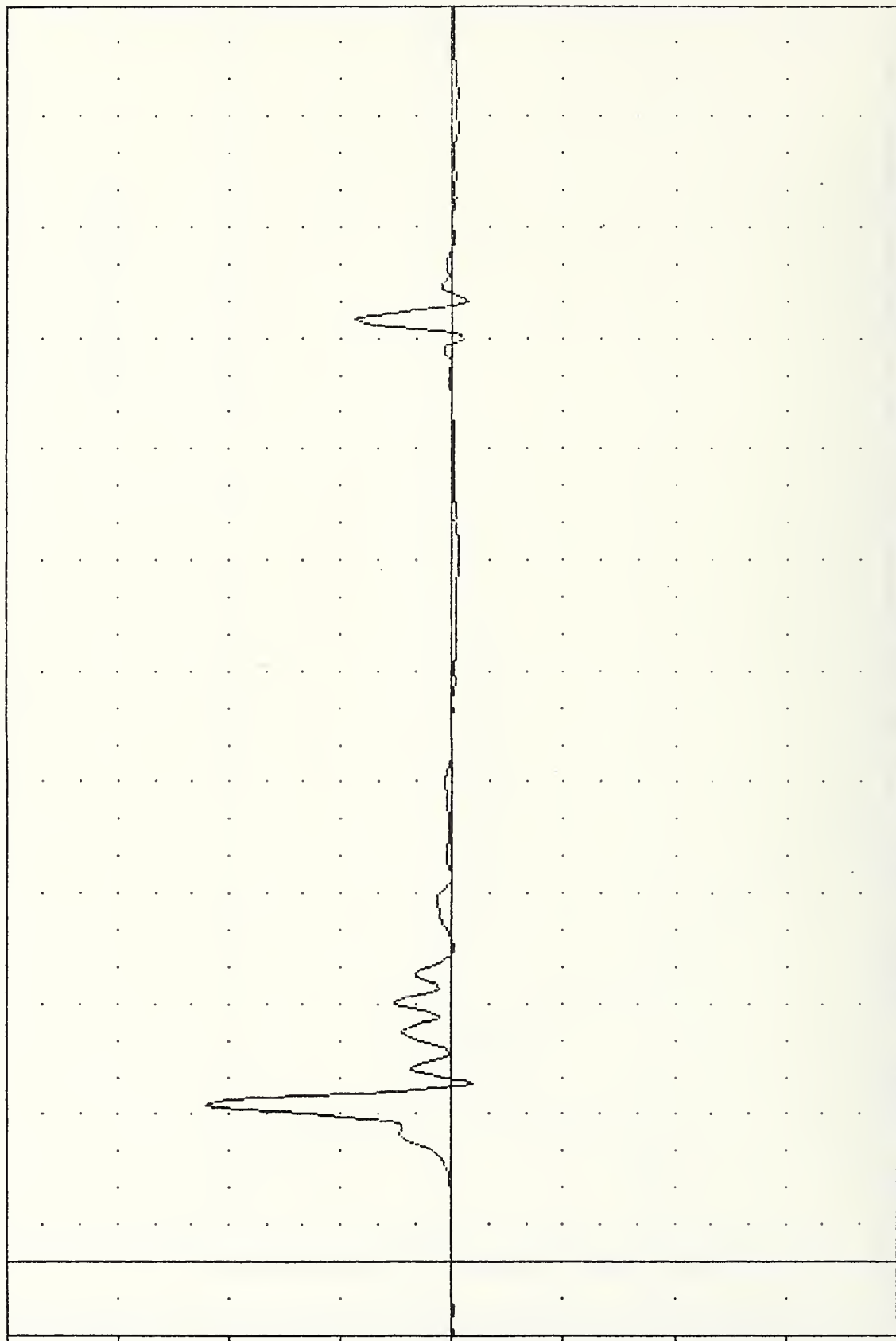
VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LWAYG4

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -9.28e 48.13 , 110.38 e 42.50

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
PASSENGER LEFT UPPER RIB ACCELERATION Y AXIS

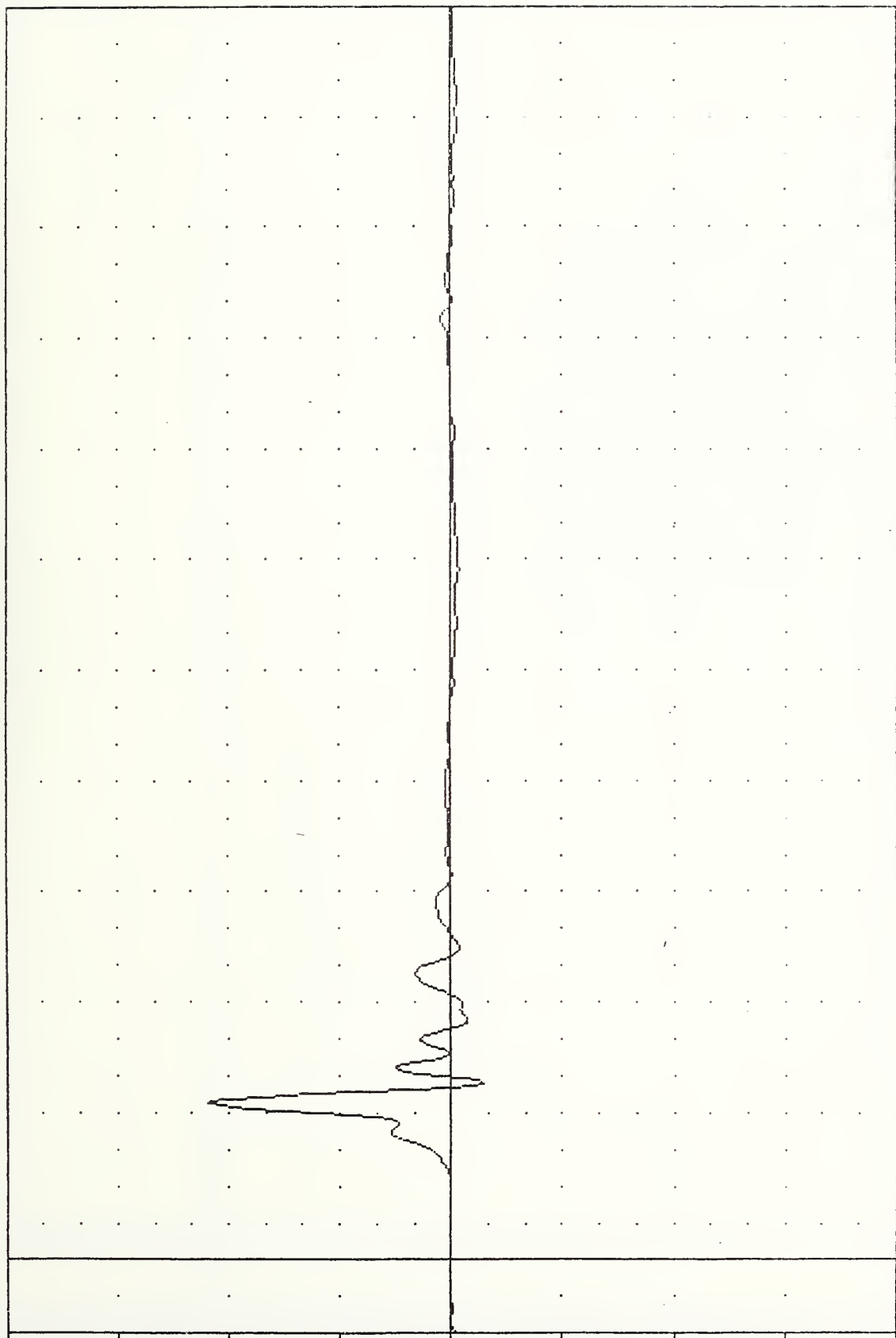
VRT 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LURYED

PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

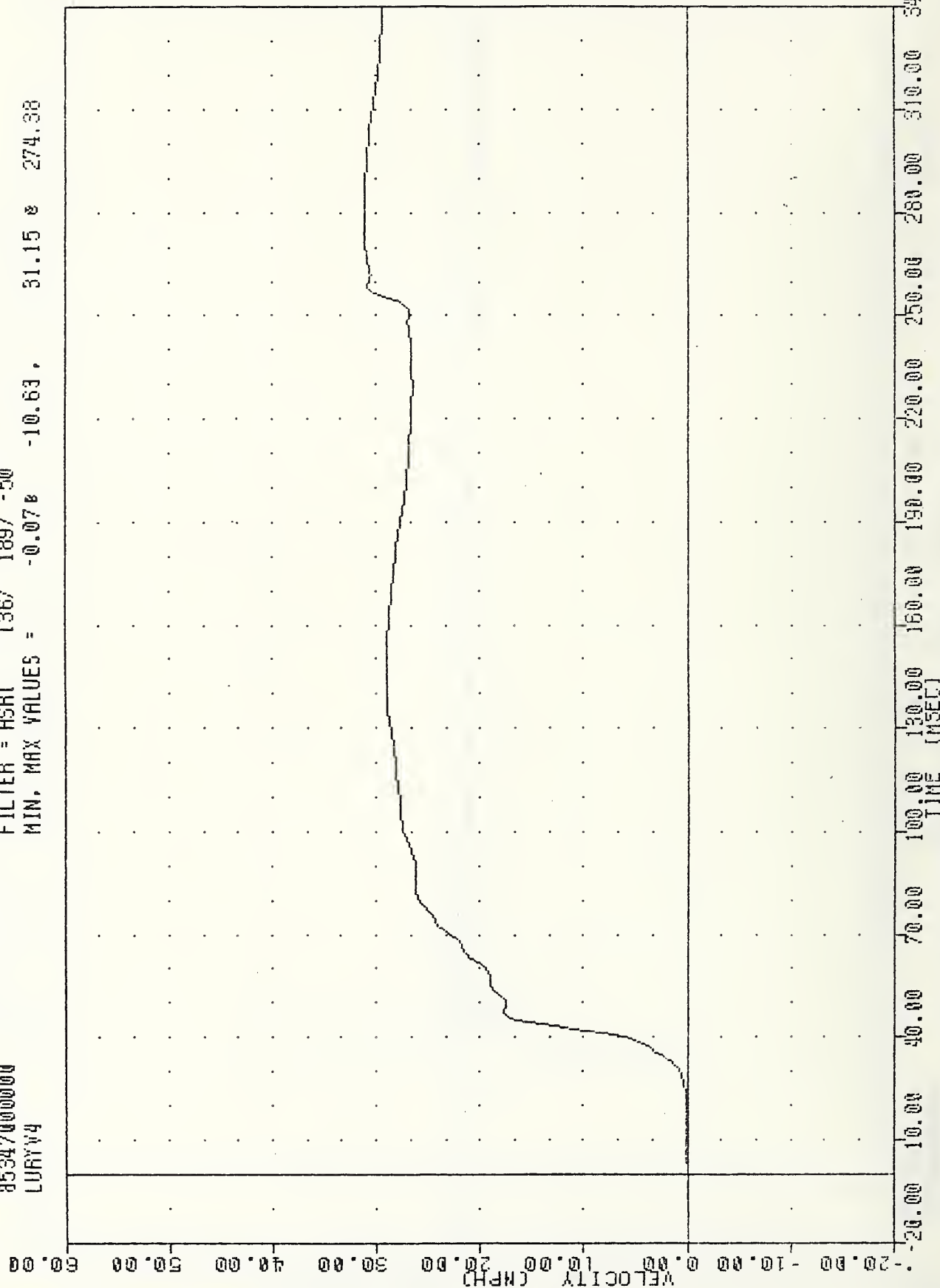
MIN, MAX VALUES = -14.72 48.13, 109.70 42.50

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER LEFT UPPER RIB ACCELERATION #2 Y AXIS

	MIN.	MAX	VALUES =	-0.07%	-10.63%	31.15%	274.38
MIN.							
MAX							
VALUES =							
-0.07%							
-10.63%							
31.15%							
274.38							



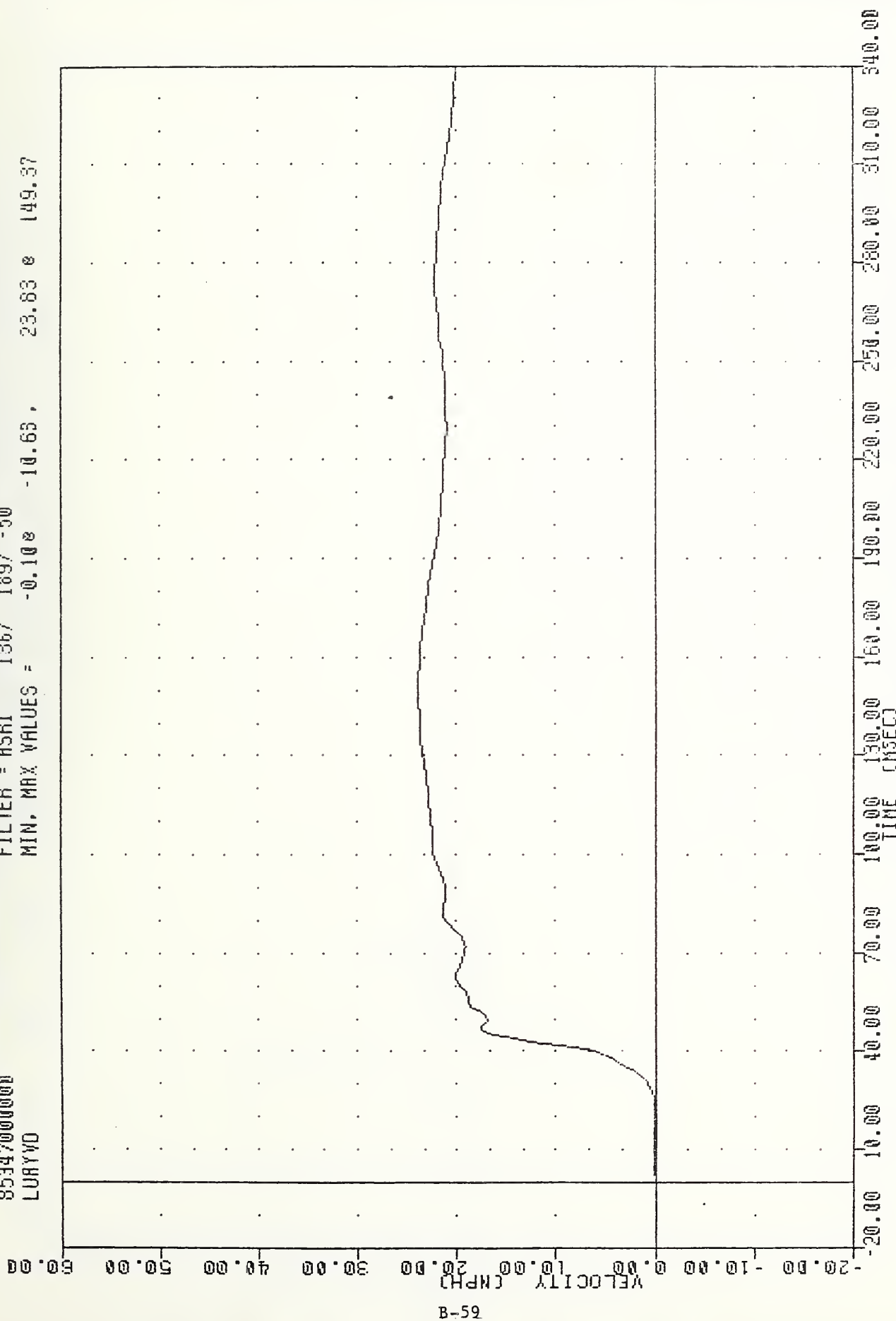
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
LINE (MISC)  
DELTA V USING LURY64

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LURYVD

PLOT DATE 19-DEC-85 14:41:31

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.108 -10.63 23.63 149.37





VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LLRYG4

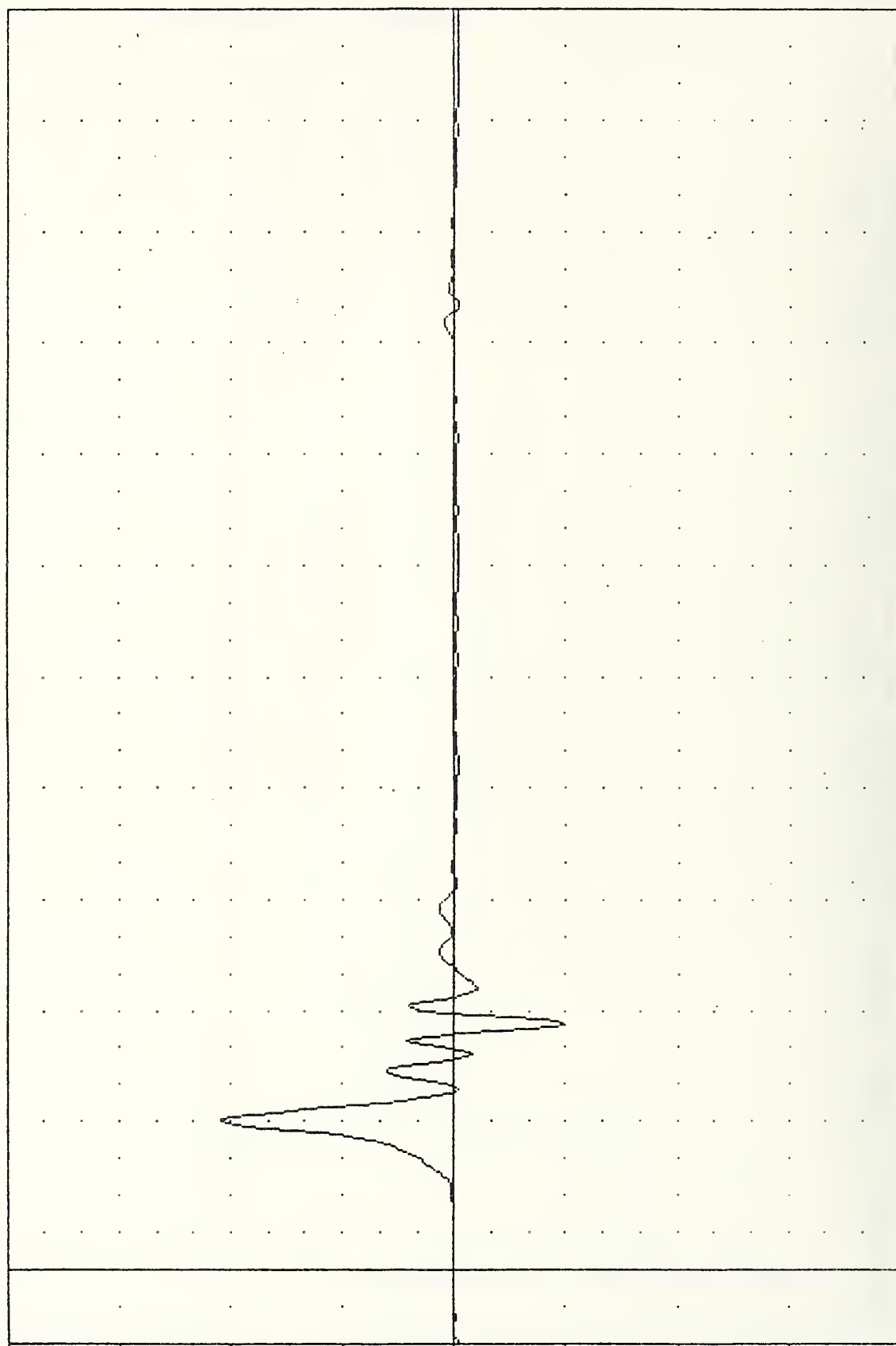
PLOT DATE 18-DEC-85 14:36:47

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -49.16 66.25, 104.57 40.00

ACCELERATION (G)

B-60



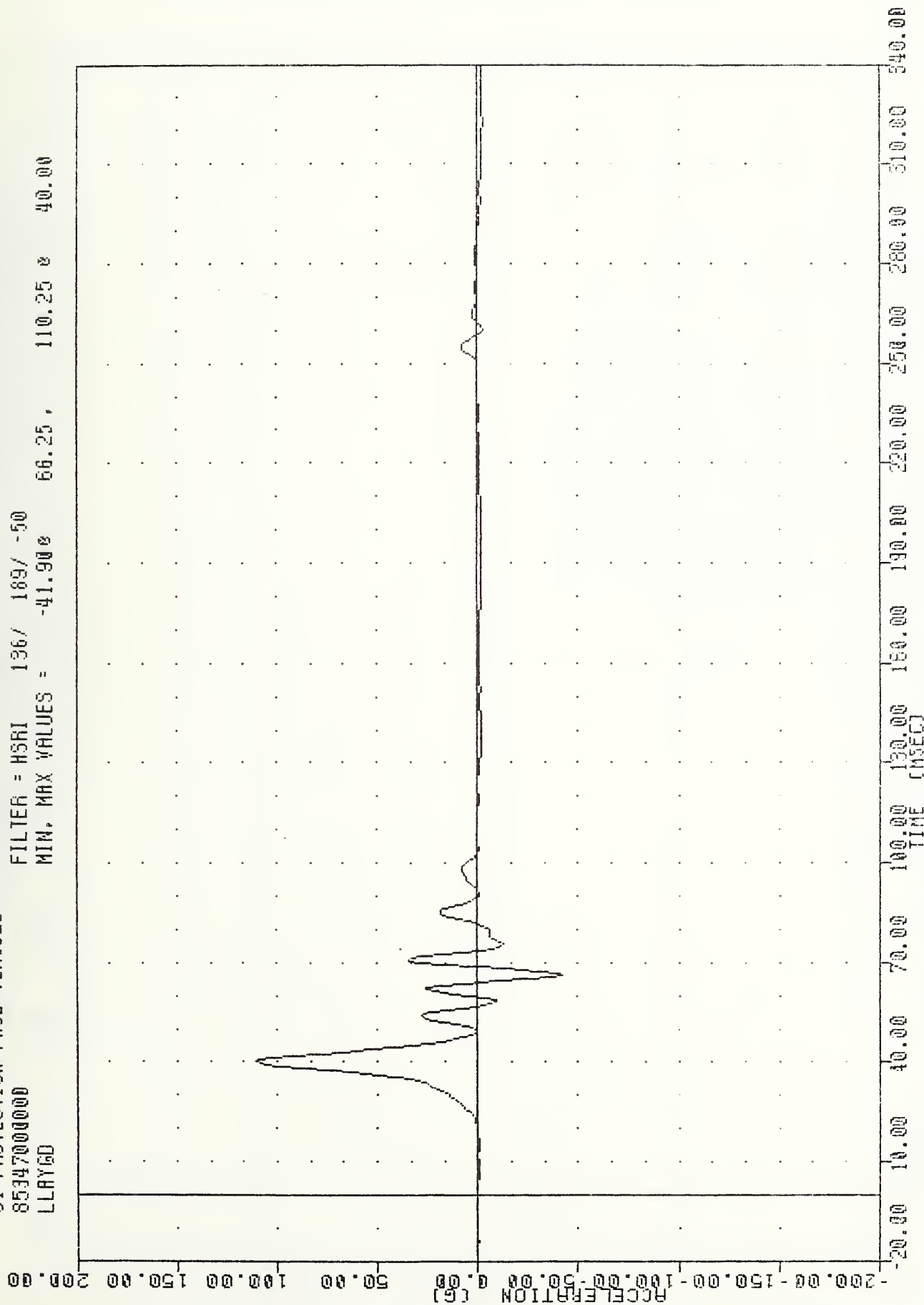
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

VR1 , 851213  
 SI PROTECTION PASS VEHICLE  
 85347000000  
 L1AY60

PLOT DATE 18-DEC-85 14:36:47

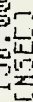
FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -41.900 66.25 , 110.25 0 40.00



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 PASSENGER LEFT LOWER RIB ACCELERATION -2 Y AXIS

	MIN	MAX	VALUES =	-0.068	-10.00	24.94	63.75
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FOLEY, G. L. &amp; ALLEN, J. W.

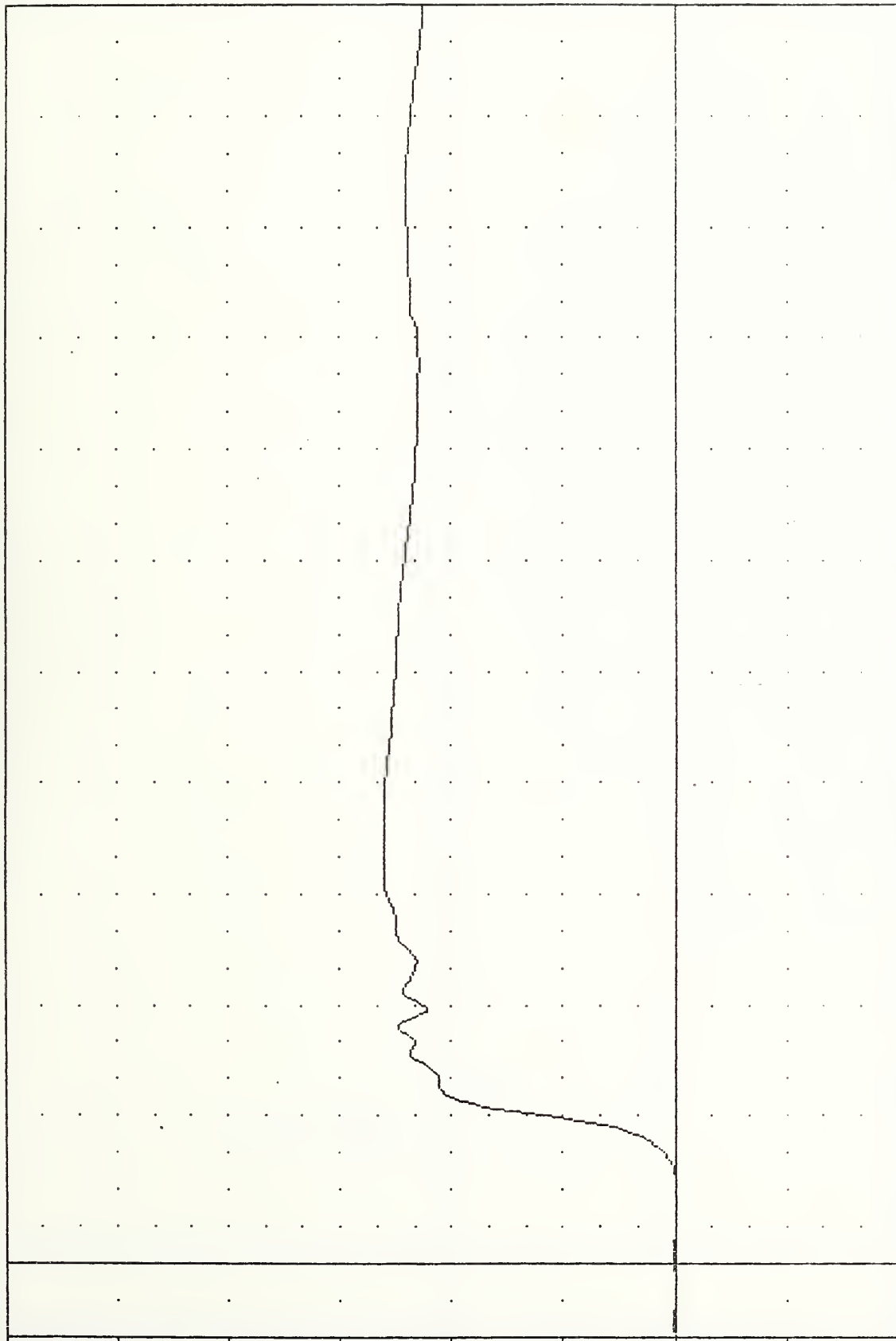
VRT 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LLRYVD

PLOT DATE 19-DEC-85 14:41:31

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = -0.08% 18.75, 26.02 % 116.25

VELOCITY (MPH)



20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
DELTA V USING LLRYVD

VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
PEVXG4

FLOT DATE 13-DEC-85 14:35:44

FILTER = BLPF

300/ 949/ -40

MIN, MAX VALUES =

-28.23e

40.25,

17.25 e

44.00

100.00

75.00

50.00

25.00

ACCELERATION (G)

0.00

-25.00

-50.00

-75.00

-100.00

-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

220.00

250.00

280.00

310.00

340.00

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

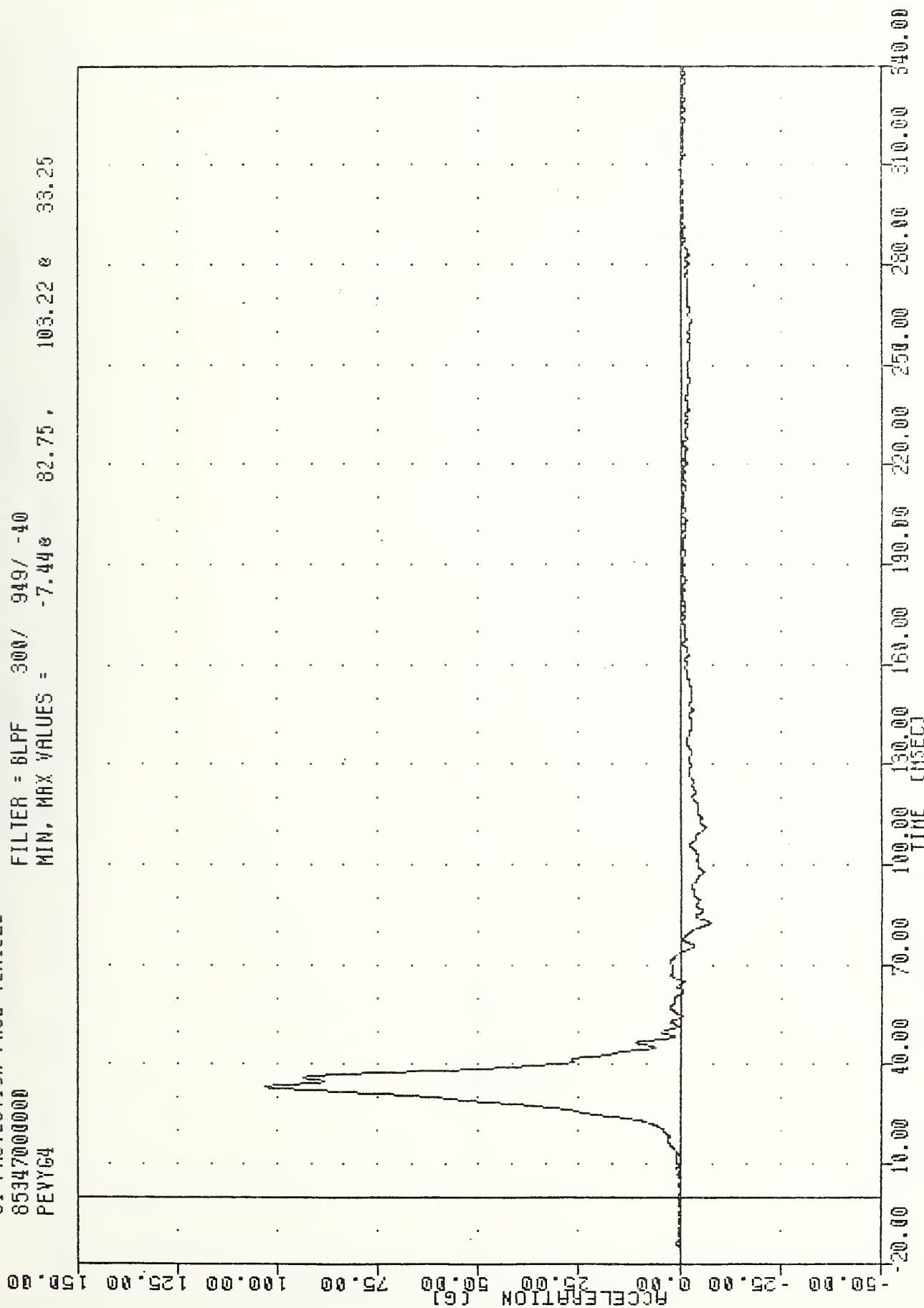
PASSENGER PELVIS ACCELERATION X AXIS



VRI , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
PEY64

PLOT DATE 18-DEC-85 14:35:44

FILTER = 6LPF 300/ 949/ -40  
MIN, MAX VALUES = -7.448 82.75 , 103.22 @ 33.25

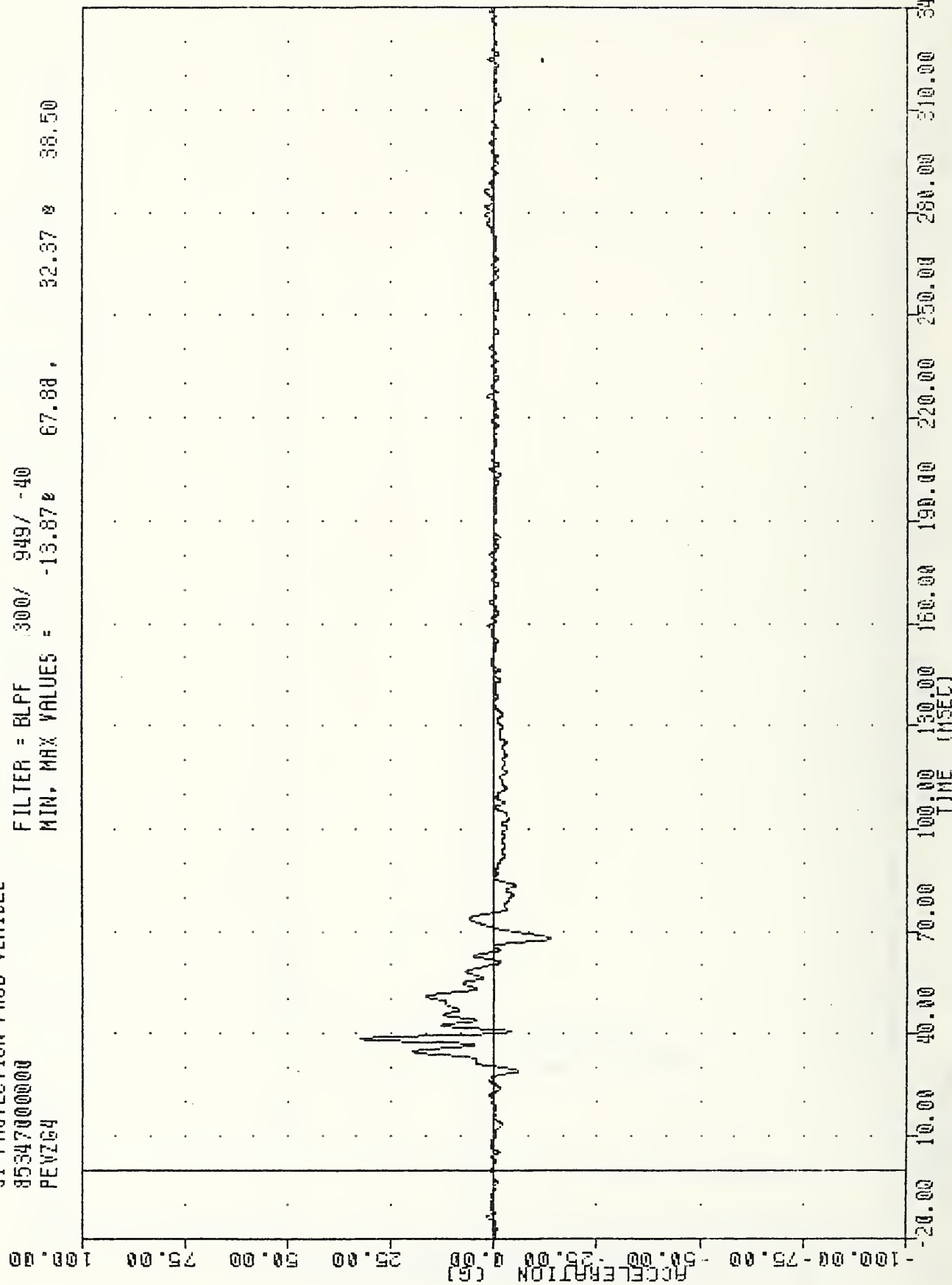


VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
PEVZG4

PLOT DATE 19-DEC-65 08:56:52

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -13.87% 67.88, 32.37 % 38.50



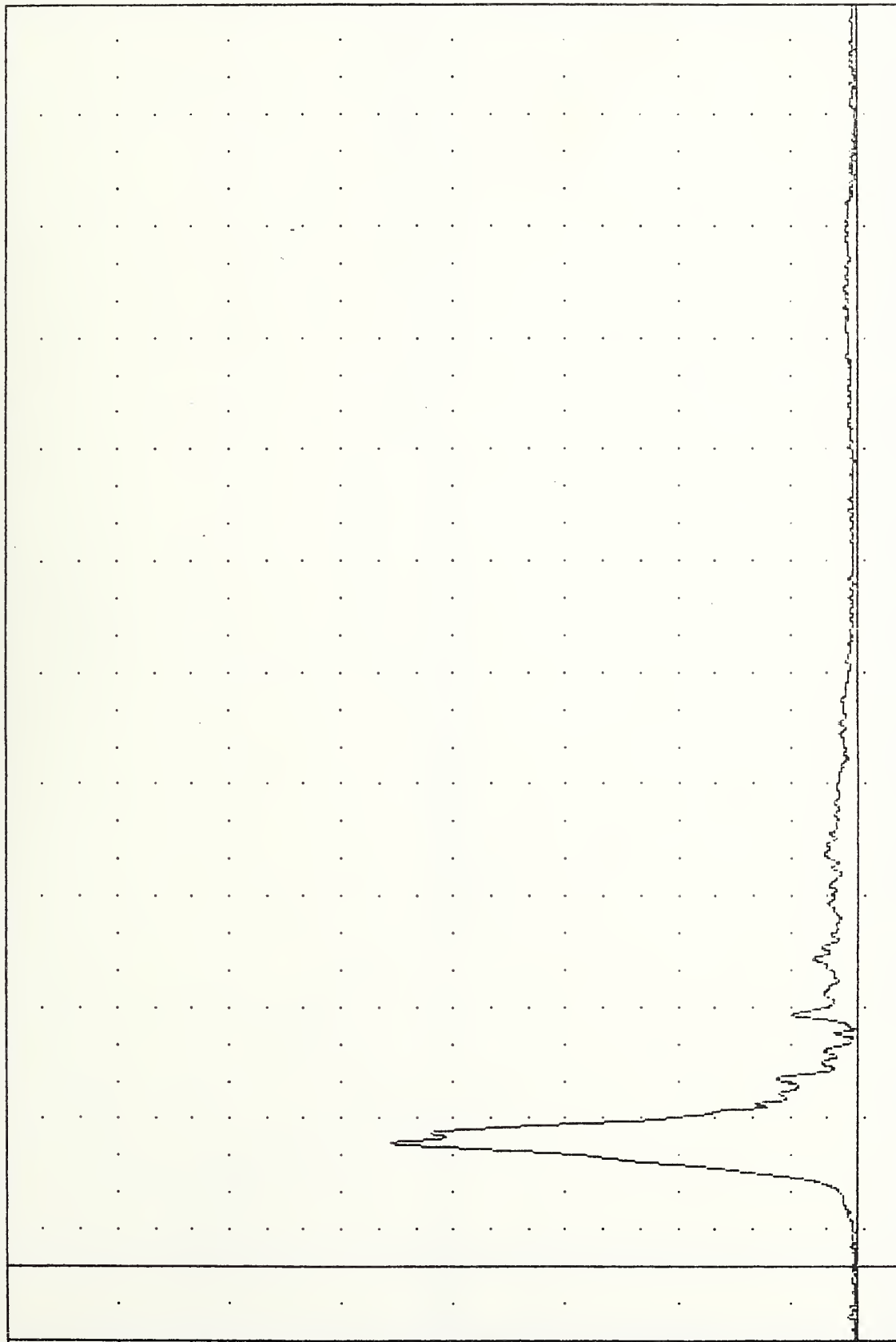
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
PASSENGER PELVIS ACCELERATION Z AXIS

VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
PEVRG4

PLOT DATE 18-DEC-85 14:35:44

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = 0.118 -8.63, 104.15 & 33.25

ACCELERATION (G)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
PASSENGER PELVIS RESULTANT

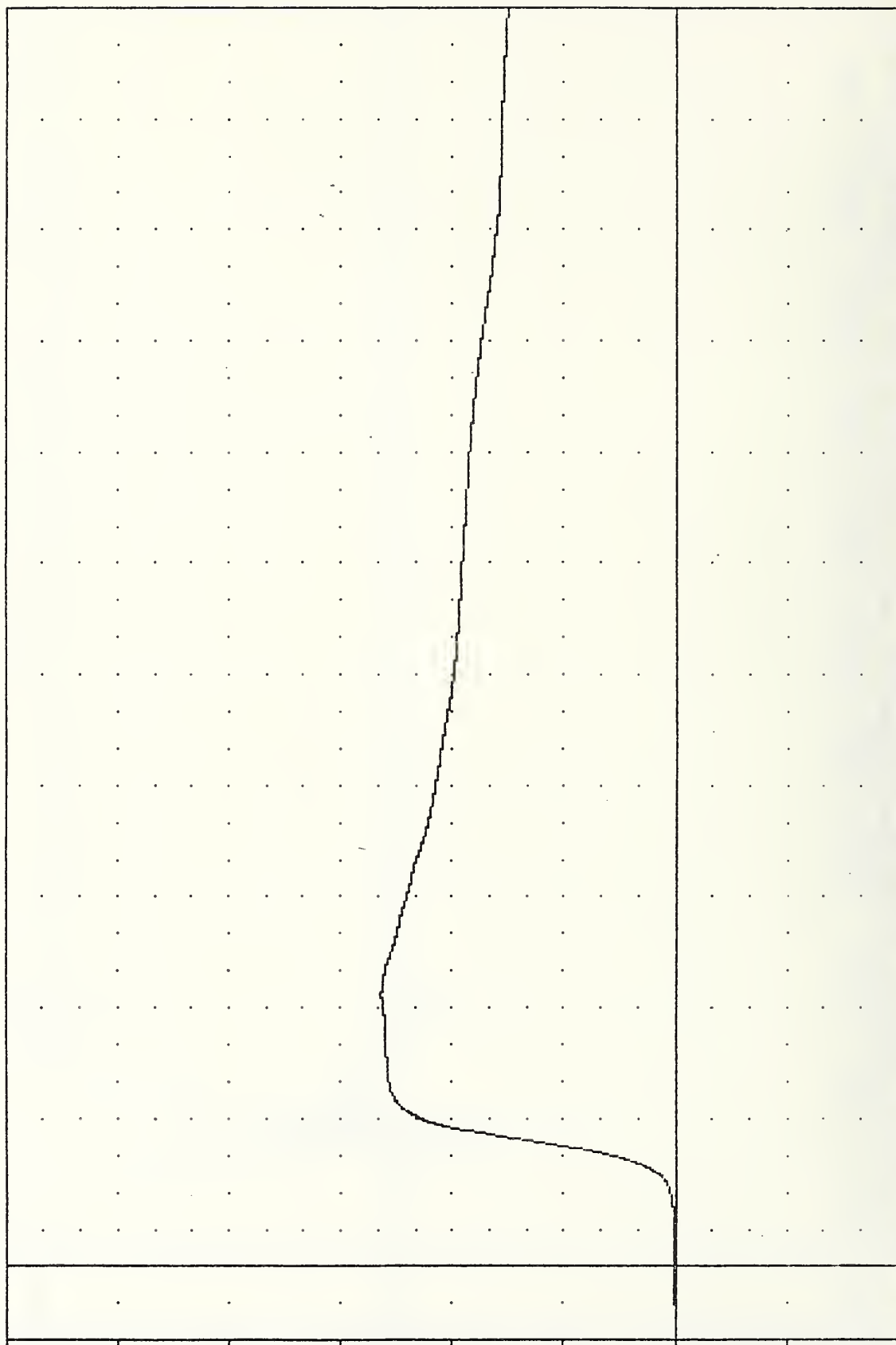
VAT , 851213  
SI PROTECTION PROD VEHICLE  
853470000000  
PEVYV4

PLOT DATE 18-DEC-85 14:35:44

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.01 e -14.75 , 26.32 e 73.63

B-68  
VELOCITY (MPH)  
-20.00 -10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00



TIME (NSEC)  
-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

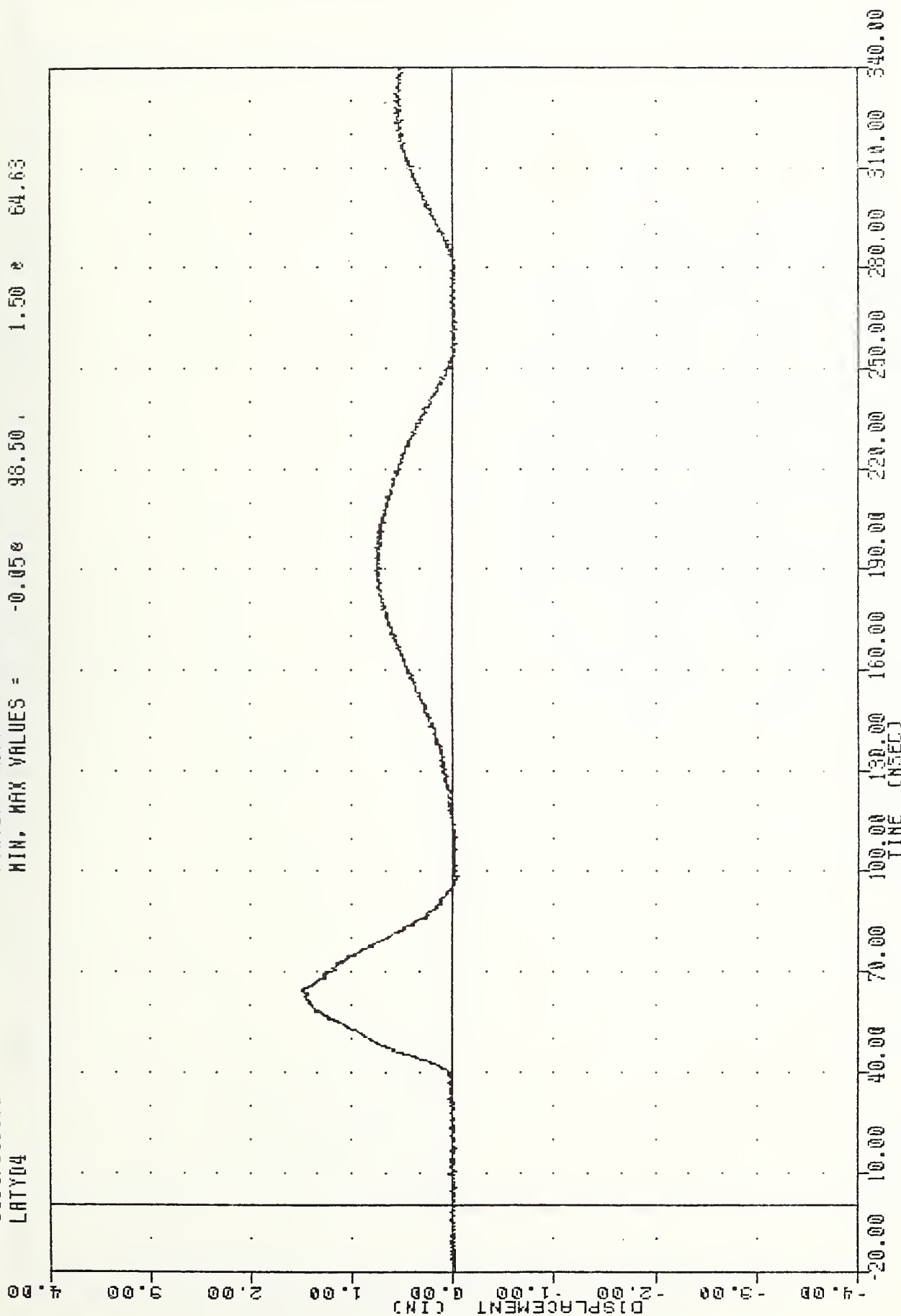
DELTA V USING PEVYV4

WAT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LATY04

PLOT DATE 18-DEC-85 14:35:44

FILTER = HLPF 1650/ 5217/ -40

MIN, MAX VALUES = -0.050 98.50 , 1.50 64.63





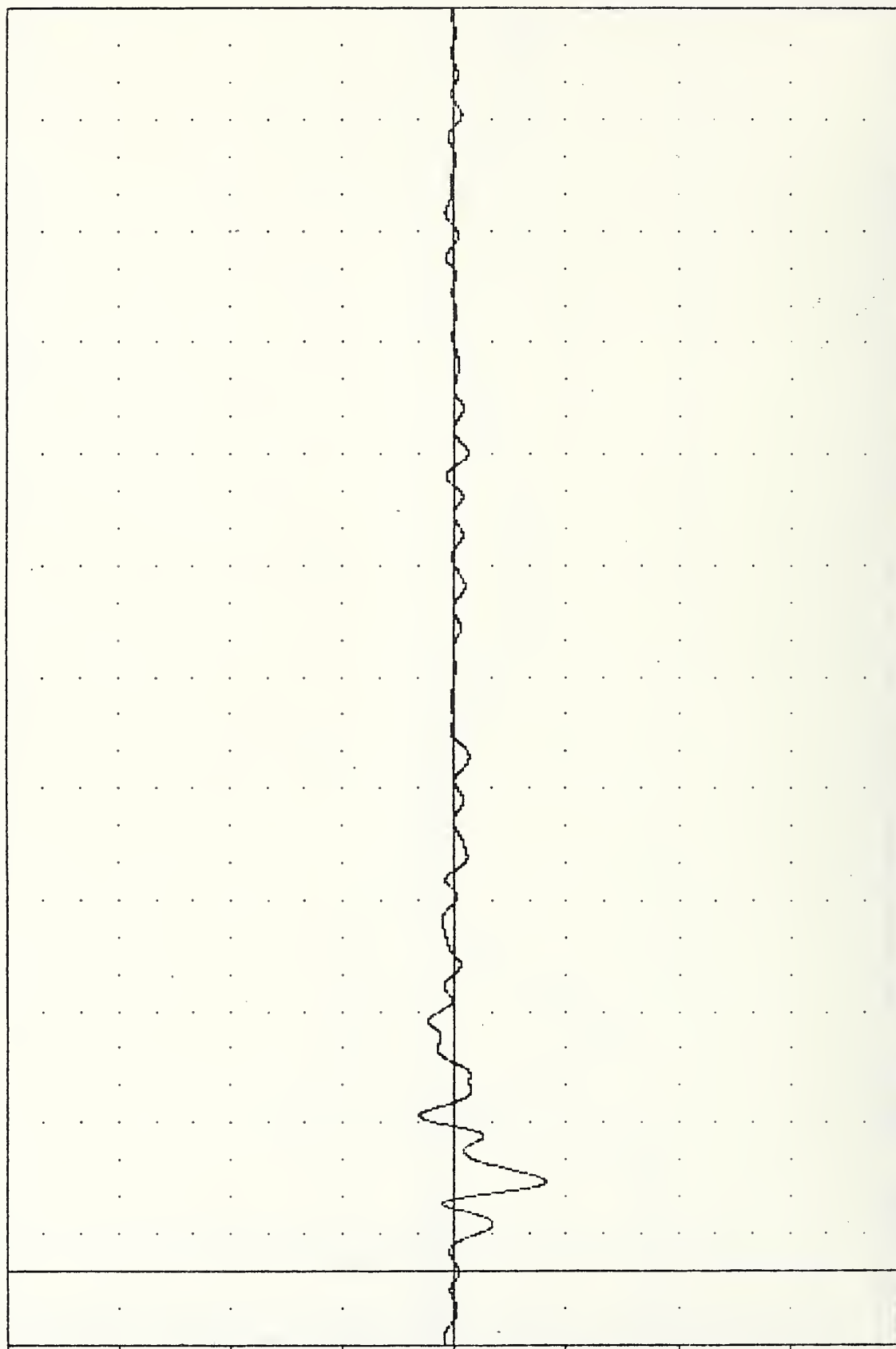
VRT . 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
AFSXC

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -8.19e 24.00, 3.19 e 41.88

ACCELERATION (G)



TIME (MSEC)

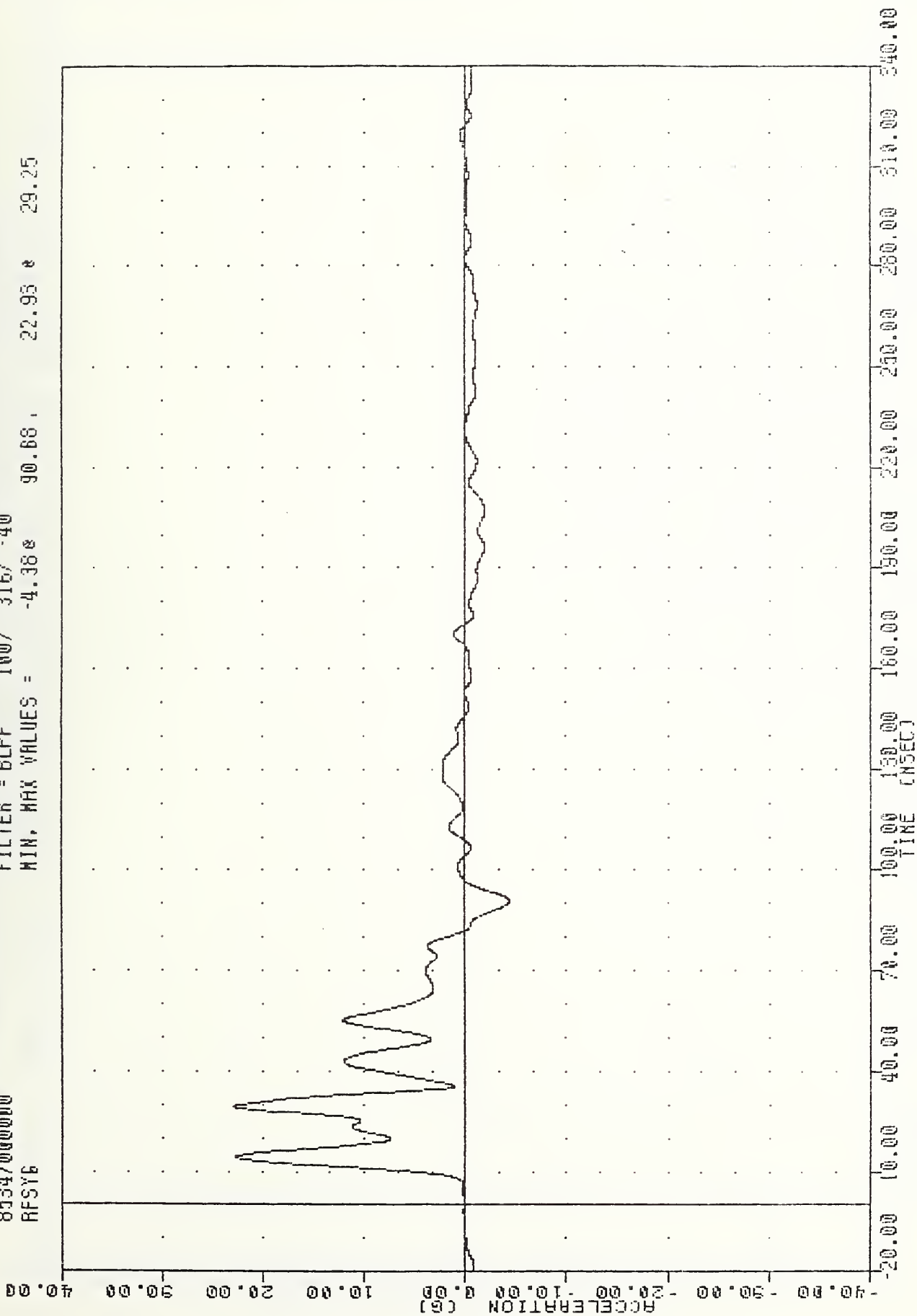
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
VEHICLE RIGHT FRONT SILL ACCELERATION X AXIS

VAT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
RFSYG

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -4.38e 90.68, 22.93 e 29.25

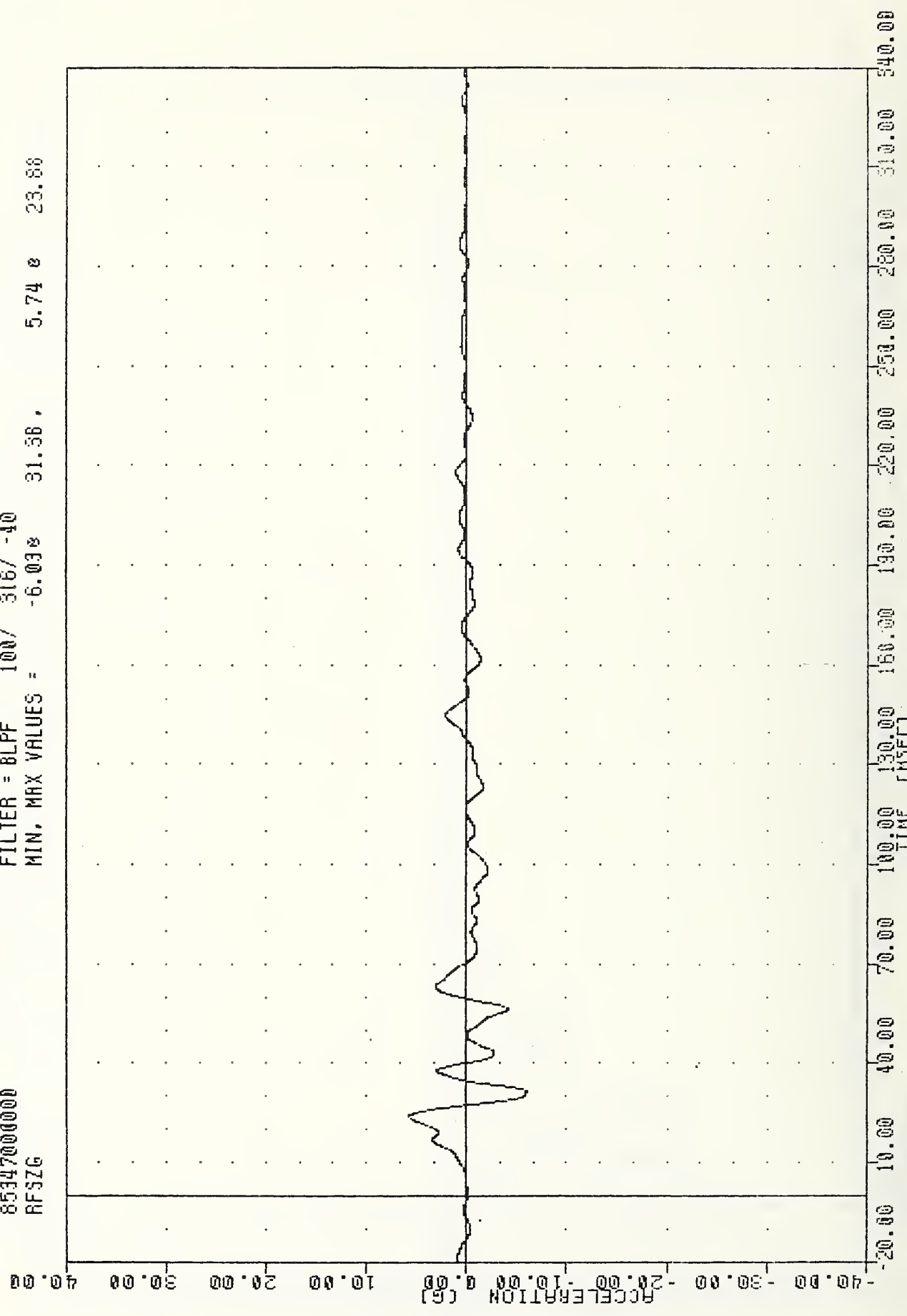


VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 RFSZG

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -6.038 31.38, 5.74 23.88



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 VEHICLE RIGHT FRONT SILL ACCELERATION Z AXIS

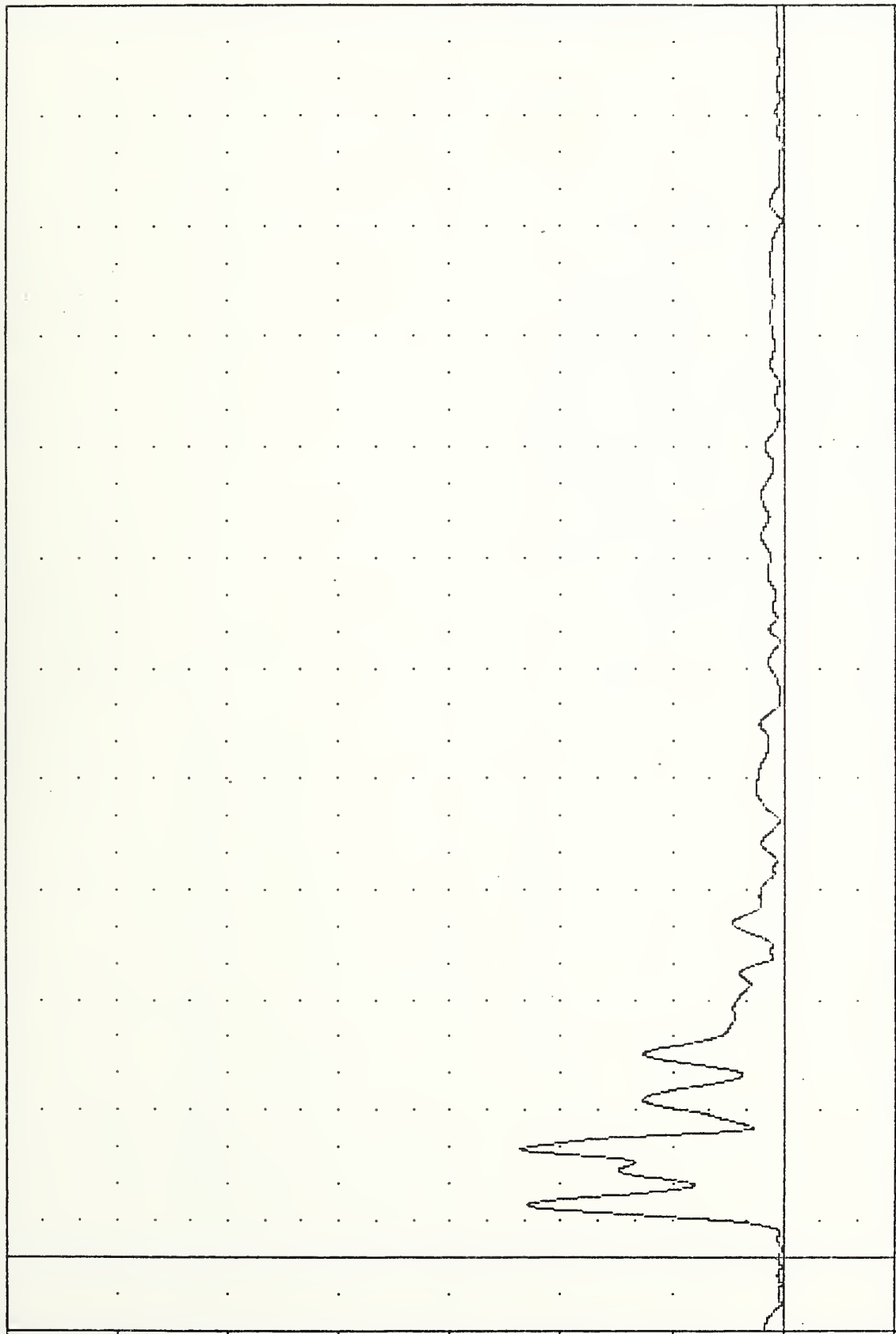
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 AF3RG

PLOT DATE 18-DEC-85 14:39:55

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = 0.14 2.25 23.59 29.38

ACCELERATION (G)



TIME (MSEC) 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 VEHICLE RIGHT FRONT SILL RESULTANT

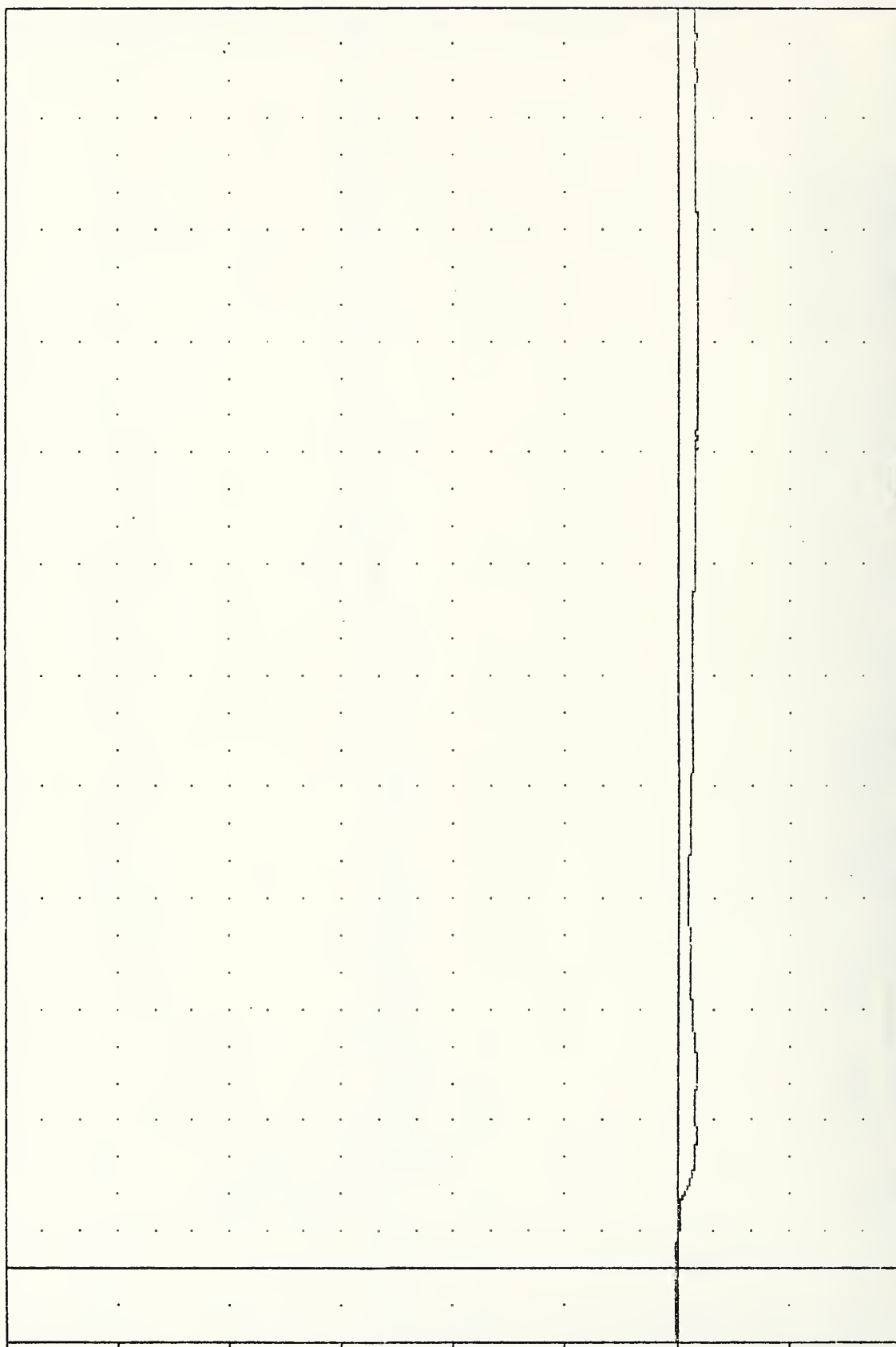
VR1 , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 RFSXV

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 30N/ 949/ -40

MIN. MAX VALUES = -1.86e 35.86 , 0.07 e 3.63

VELOCITY (MPH)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

DELTA V USING RFSXG



YRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 RFSYG

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.068 -7.50, 13.85 142.63

60.00

50.00

40.00

30.00

20.00

10.00

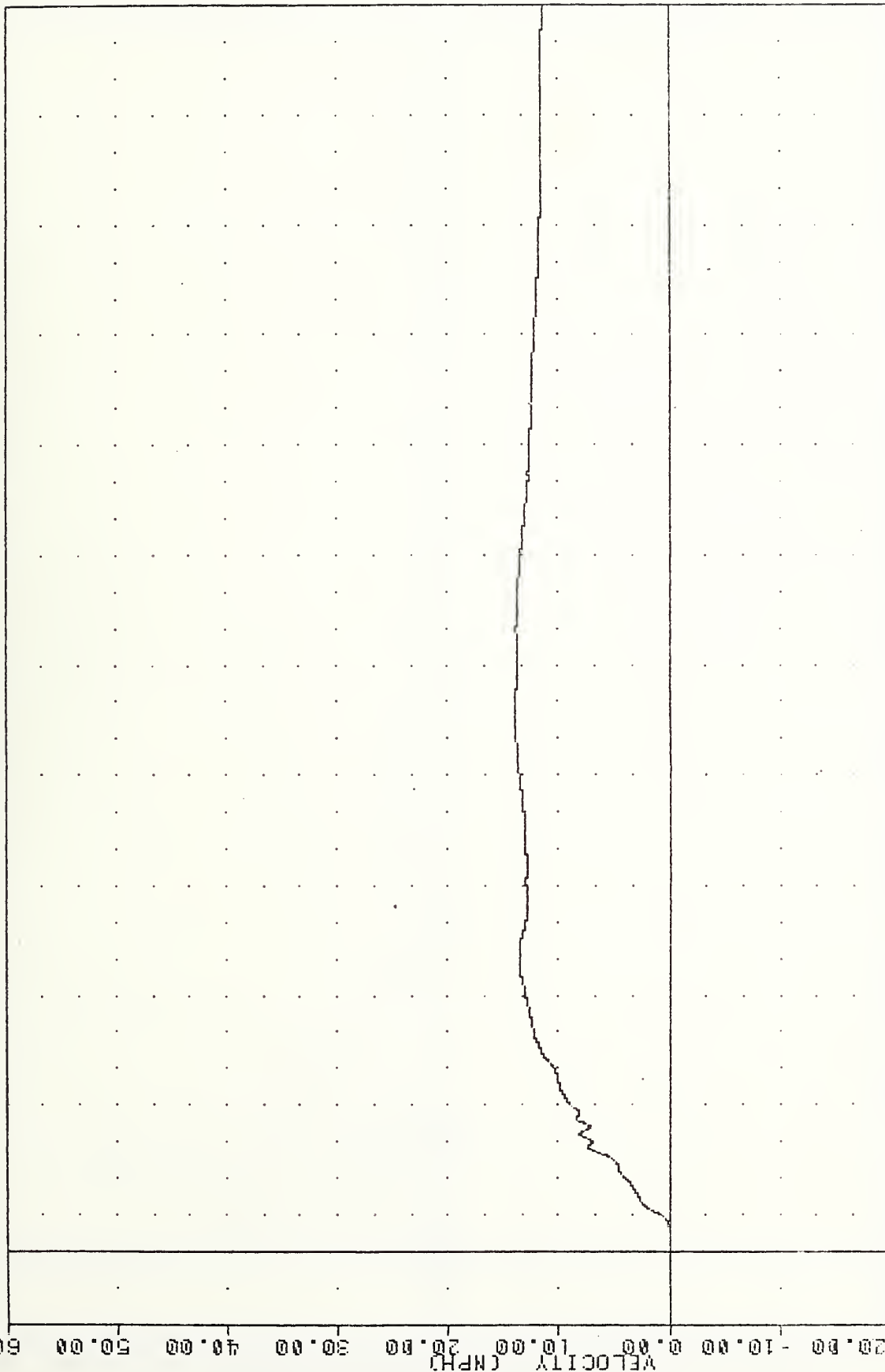
0.00

-10.00

-20.00

-30.00

B-75



TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

DELTA V USING RFSYG

VAT . 851213

SI PROTECTION PROD VEHICLE

85347000000

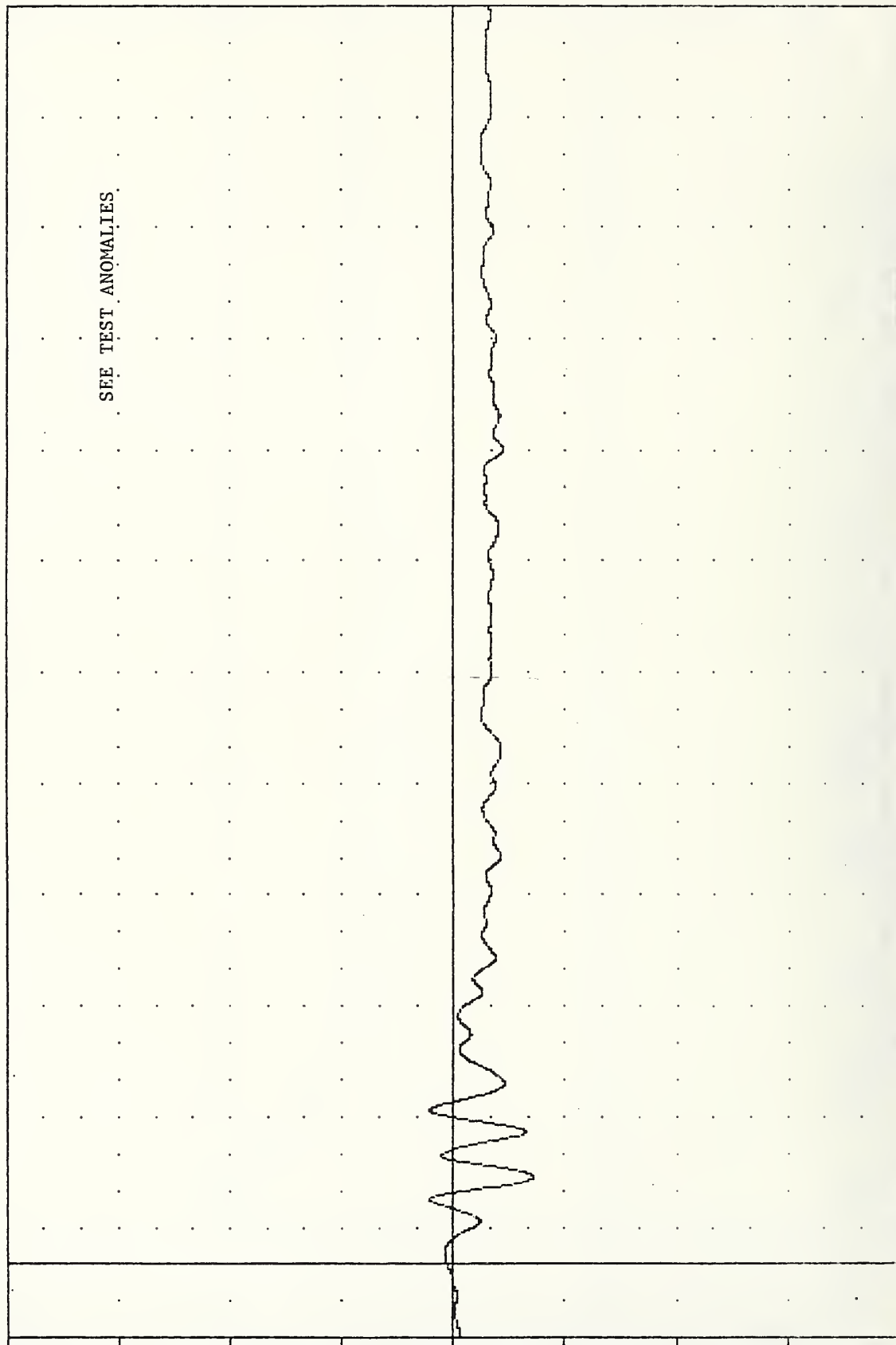
PRXG

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLFF 100/ 316/ -40

MIN, MAX VALUES = -7.248 23.63 , 2.15 8 17.63

ACCELERATION (G)



20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

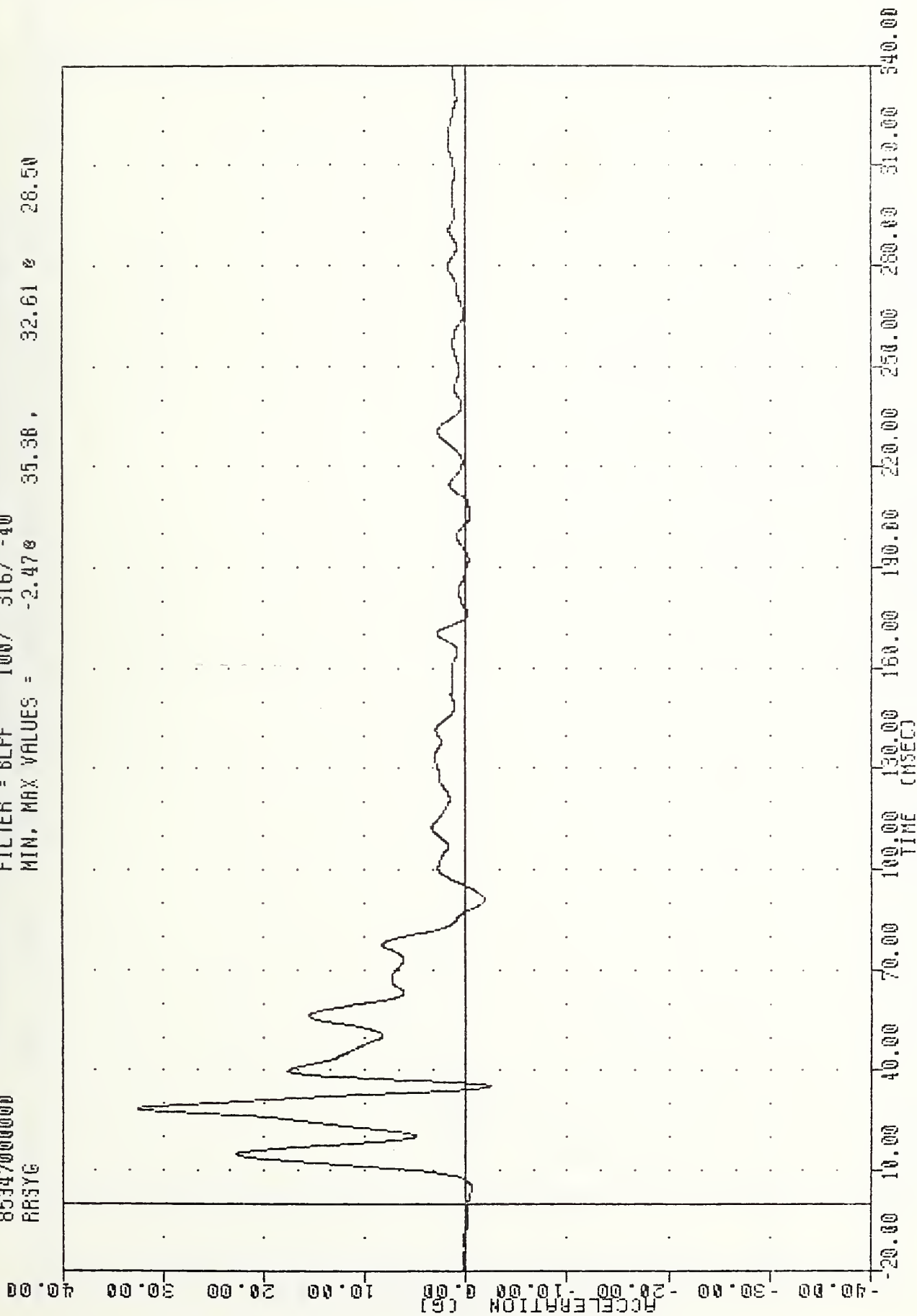
VEHICLE RIGHT REAR SILL ACCELERATION X AXIS

VRT 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
RRSYG

PLOT DATE 18-DEC-85 14:37:51

FILTER = 6LPF 100/ 316/ -40

MIN. MAX VALUES = -2.470 35.38, 32.61 0 28.50



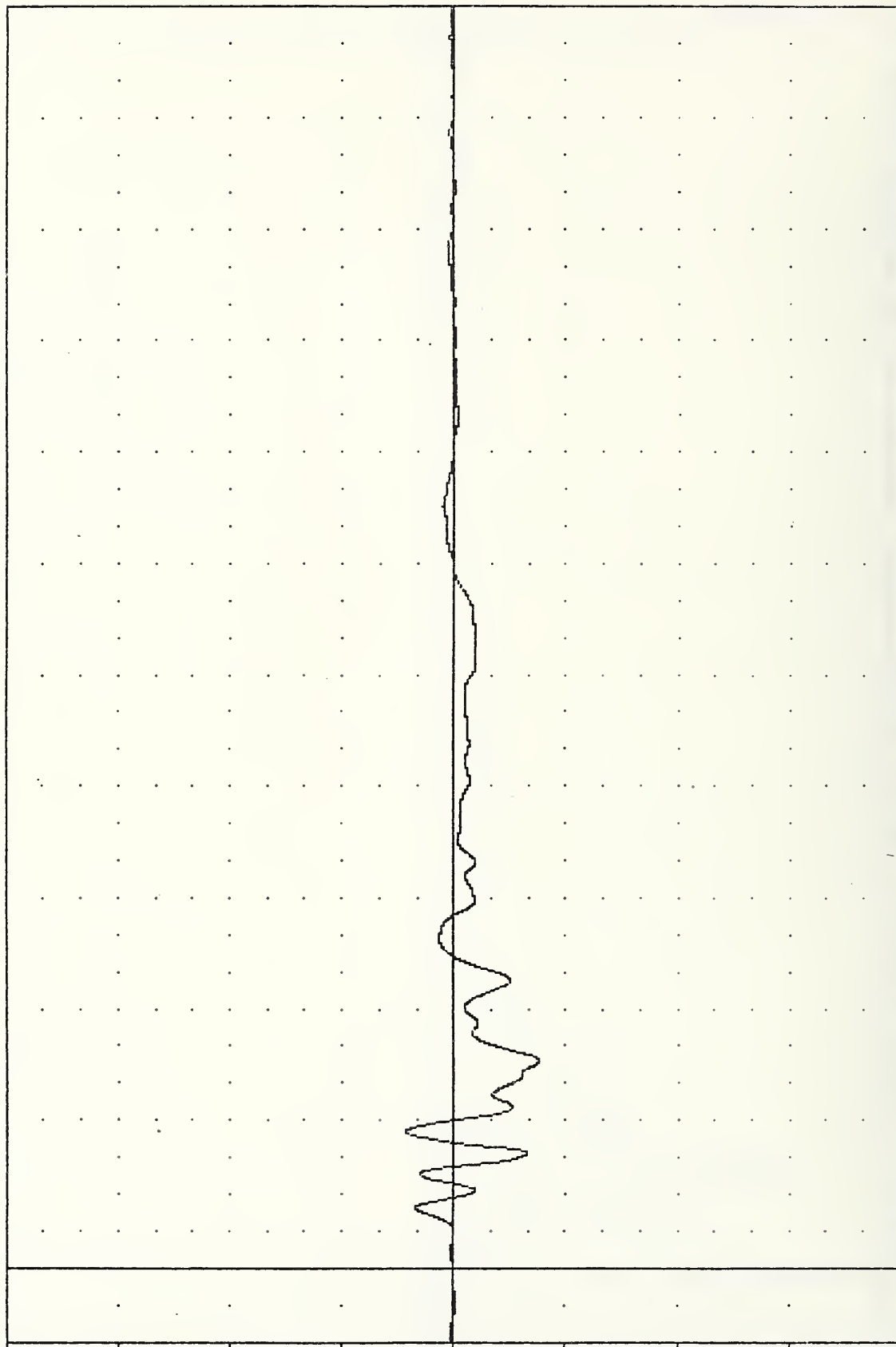
VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
RRSZG

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -7.67% 56.00, 4.35% 37.00

ACCELERATION (G)



TIME (msec)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
VEHICLE RIGHT REAR SILL ACCELERATION Z AXIS

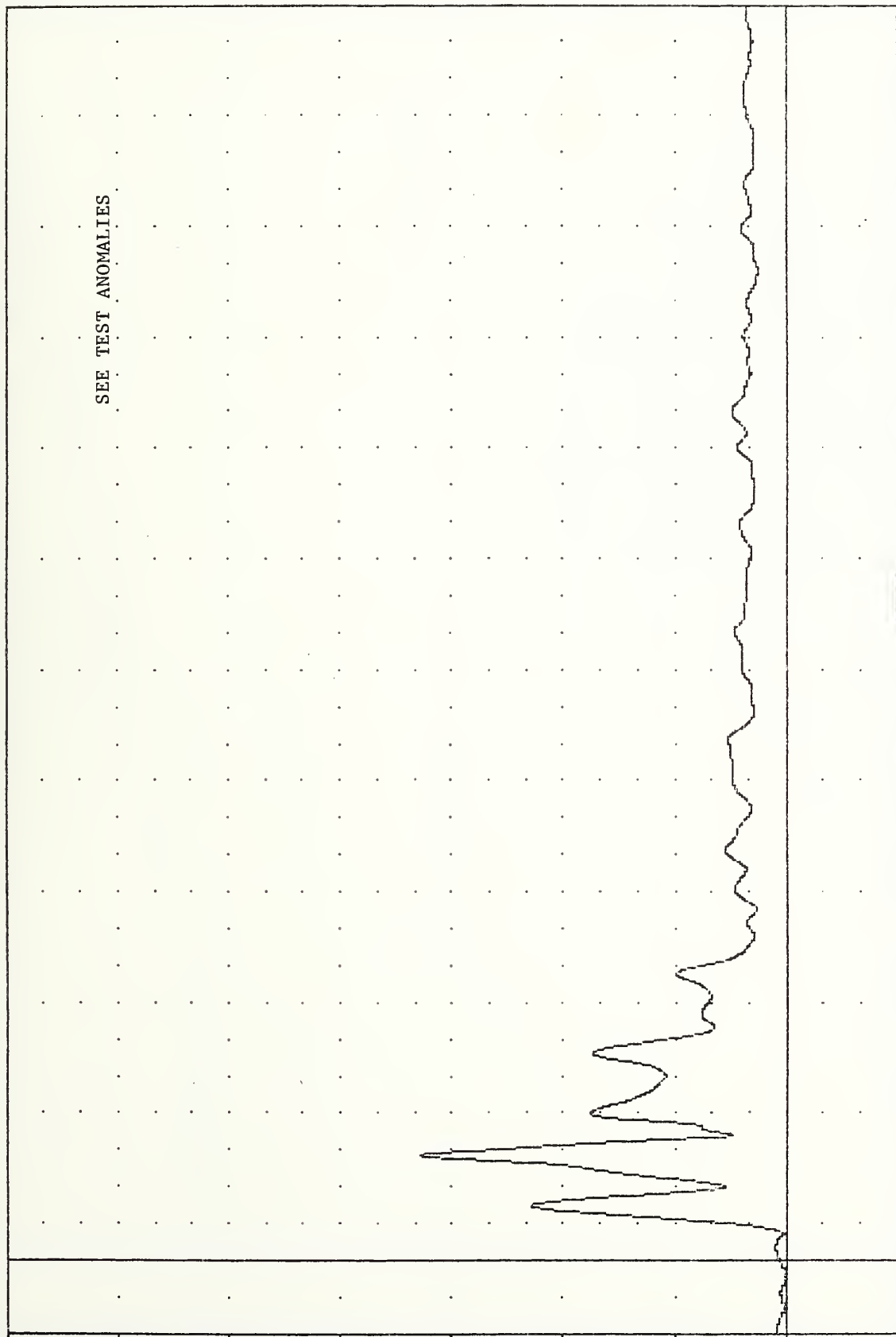
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 RR3RG

PLOT DATE 18-DEC-85 14:39:55

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.13e 7.13, 32.79 & 26.50

ACCELERATION (G)



-10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00  
 -20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00  
 100.00 150.00 200.00 250.00 300.00 350.00 400.00 450.00 500.00 540.00  
 TIME (msec)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 VEHICLE RIGHT REAR SILL RESULTANT



VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
RRSXV

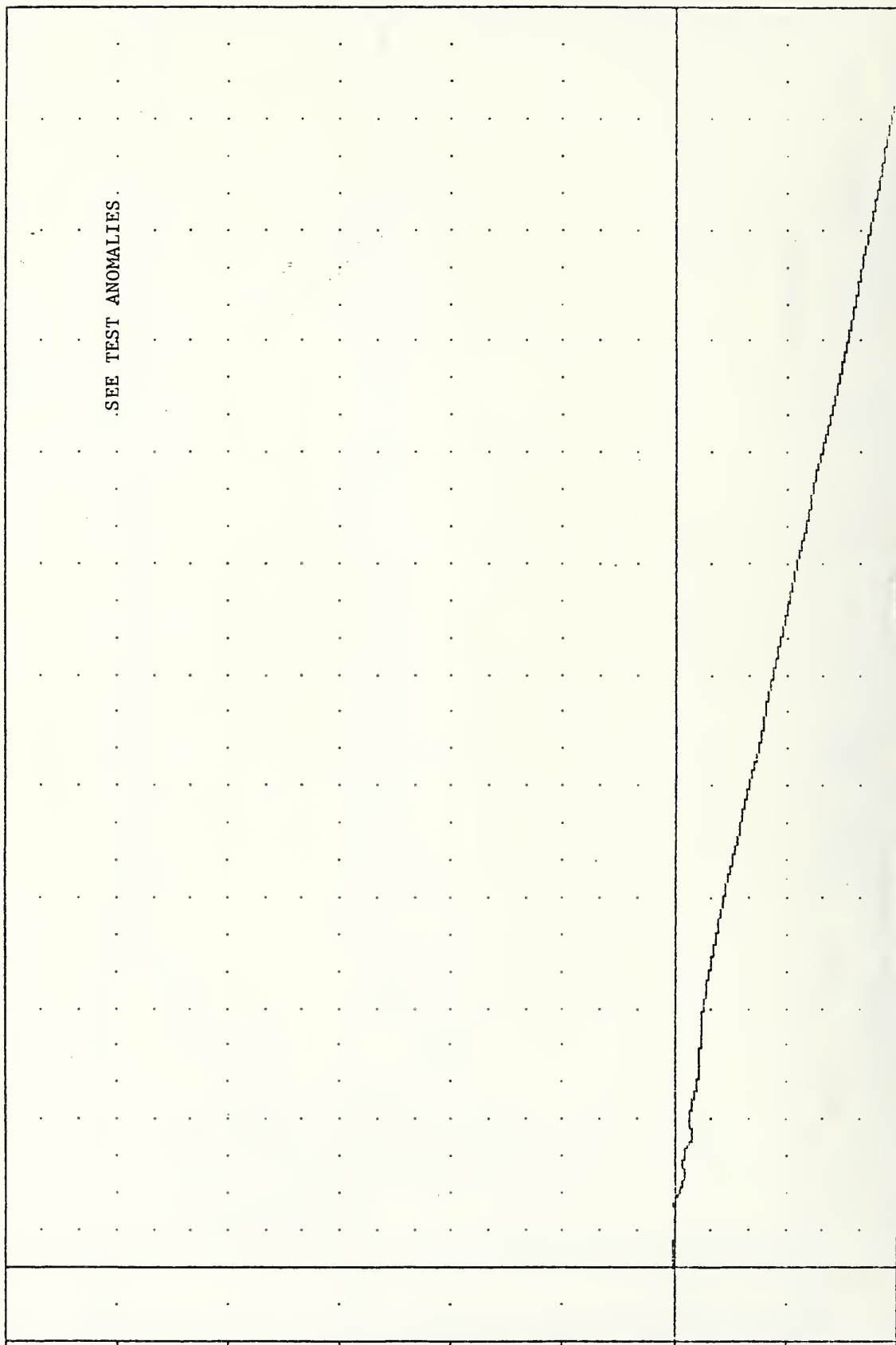
PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -21.44e 340.00, 0.06 e 3.25

VELOCITY (MPH)

B-80



TIME (msec)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

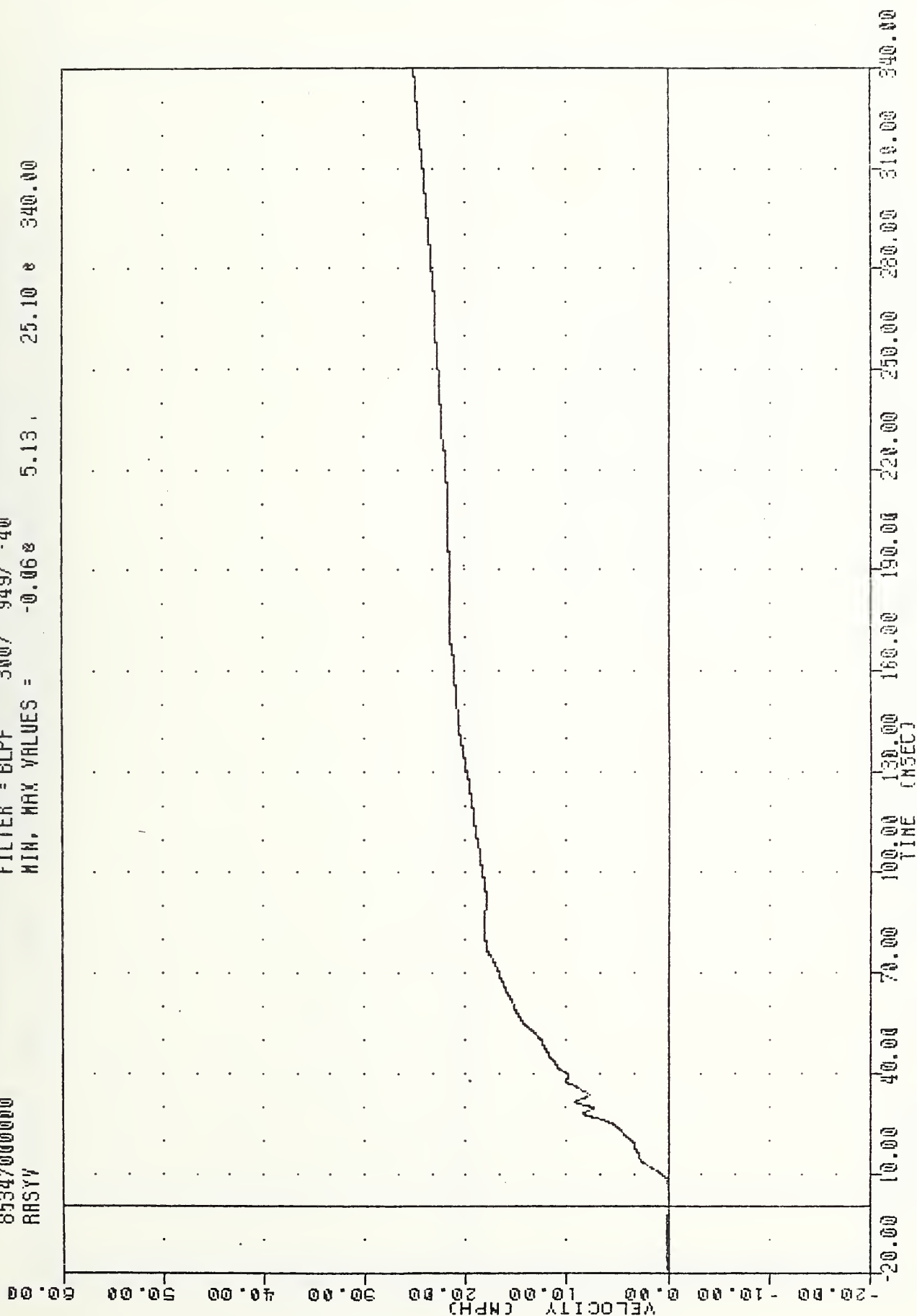
DELTA V USING RRSXG

VAT , 851213  
 SI PROTECTION PASSED VEHICLE  
 853470000000  
 RRSYV

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.068 5.13 , 25.10 & 340.00



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING RRSYG

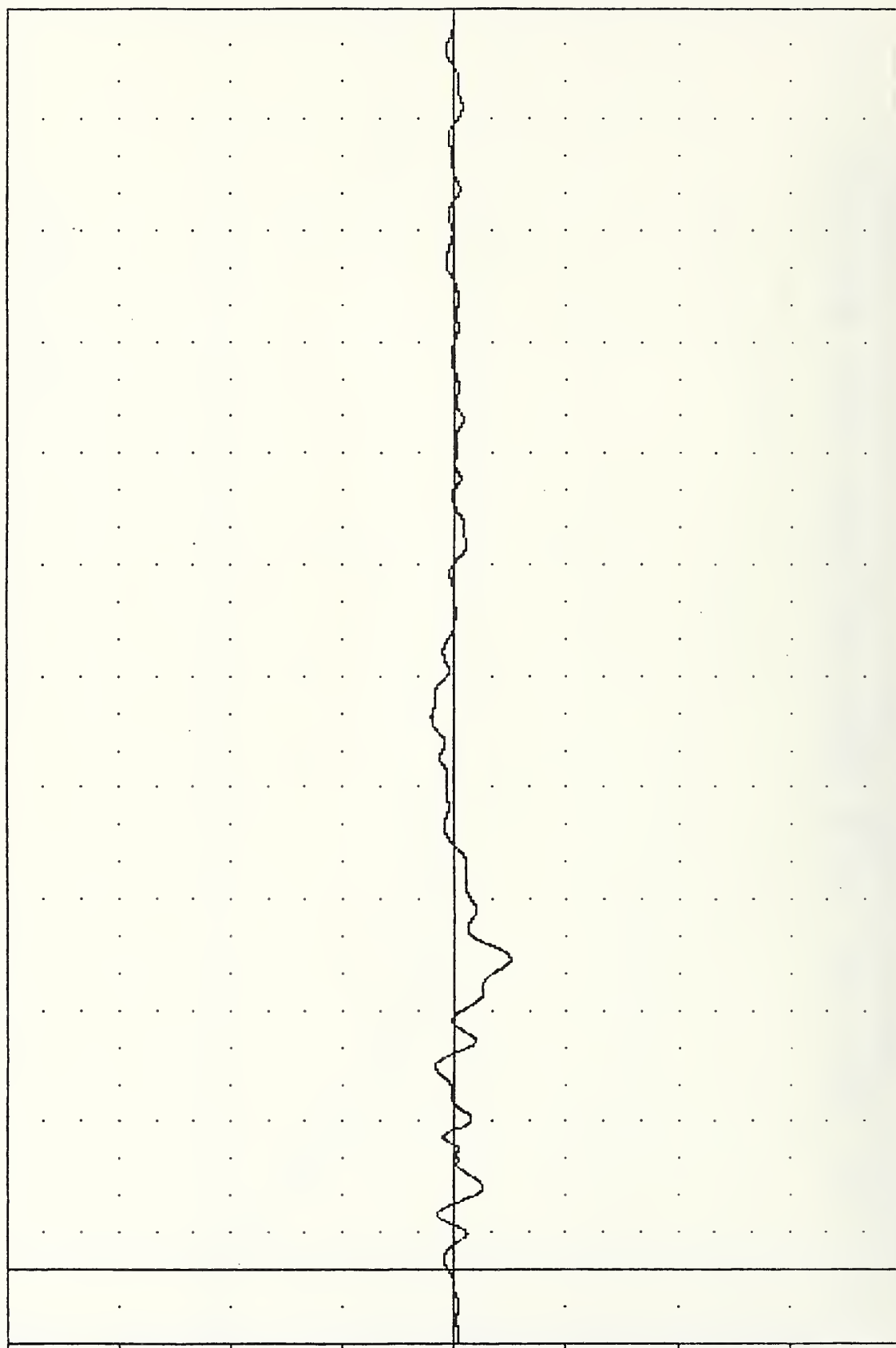
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 RDKXG

PLOT DATE 18-DEC-85 14:37:51

FILTER = 8LPF 100/ 316/ -40

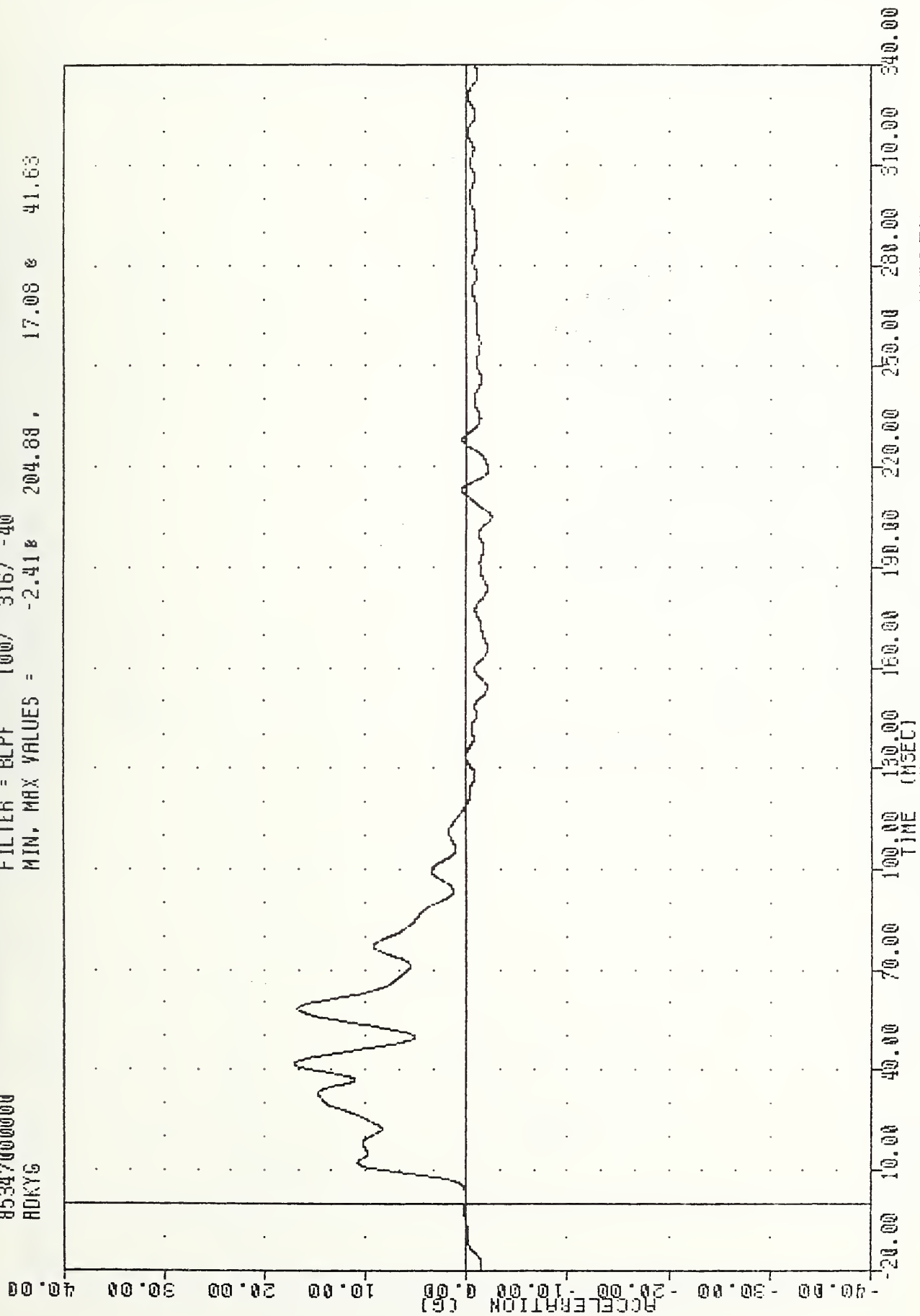
MIN, MAX VALUES = -4.968 83.75, 2.08 149.13

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 VEHICLE REAR DECK ACCELERATION X AXIS

VRT 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 ADKYG  
 PLOT DATE 18-DEC-85 14:37:51  
 FILTER = BLPF 100/ 316/ -40  
 MIN, MAX VALUES = -2.41 204.88, 17.08 41.63



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 VEHICLE REAR DECK ACCELERATION Y AXIS

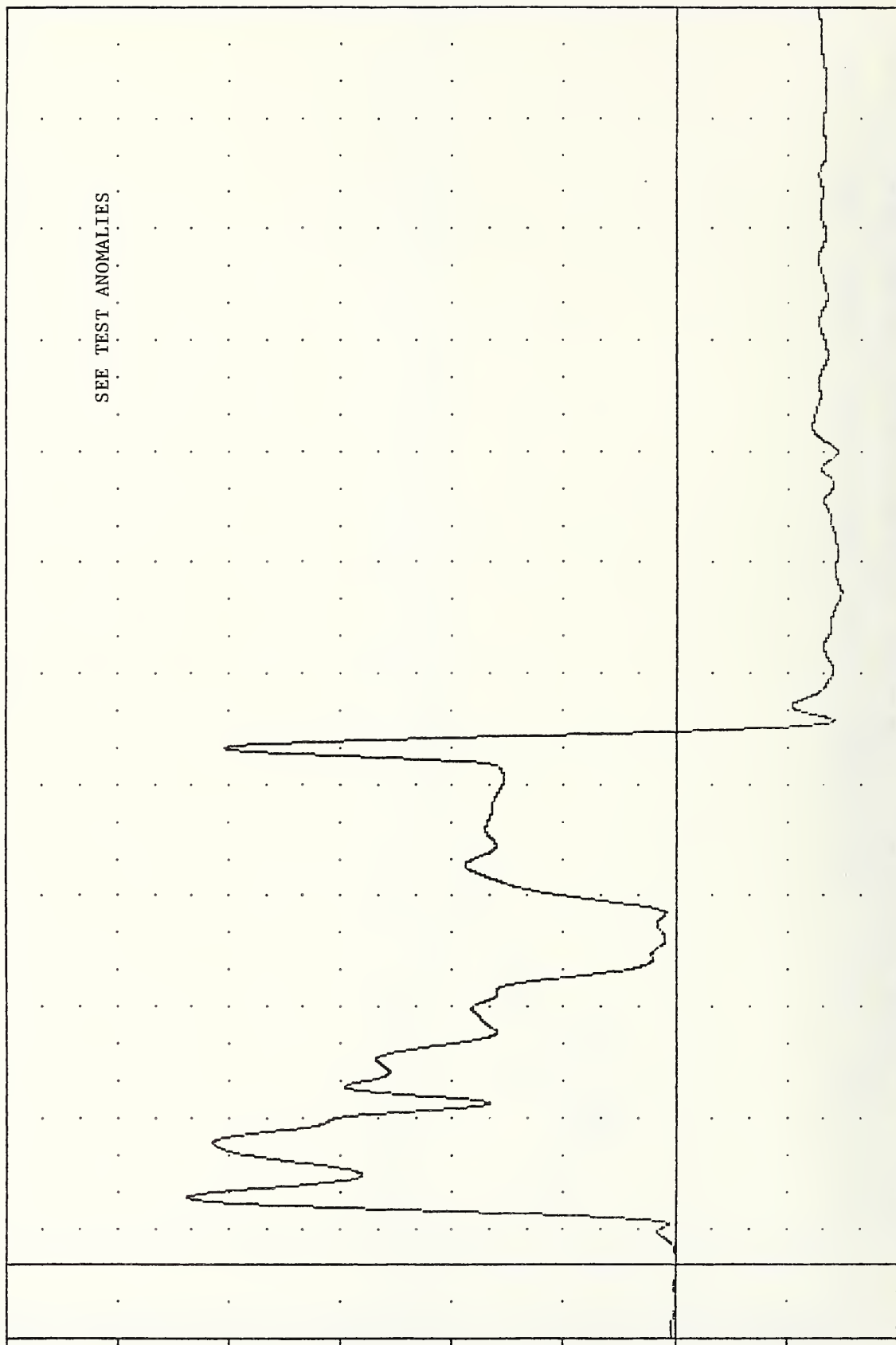
VAT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
RDKZ6

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -29.70 182.00 87.60 18.38

ACCELERATION (G)



TIME (msec)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
VEHICLE REAR DECK ACCELERATION Z AXIS



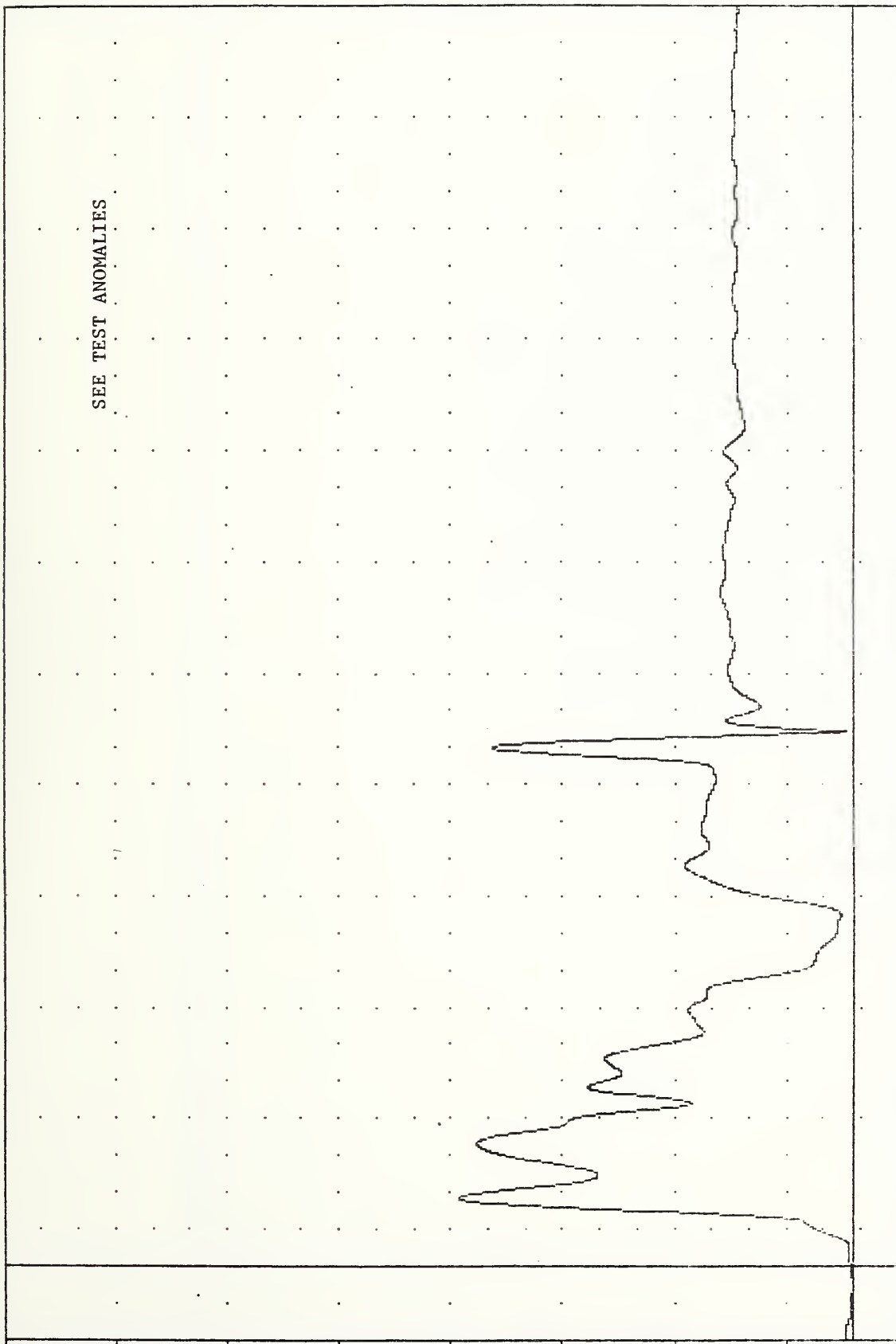
VRT 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
ADKRG

PLOT DATE 19-DEC-85 08:56:52

FILTER = 6LPF 100/ 316/ -40

MIN. MAX VALUES = 0.108 -6.25, 88.19 e 18.38

ACCELERATION (G)  
-10.00 15.00 40.00 65.00 90.00 115.00 140.00 165.00 190.00



20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
TIME (MSEC)

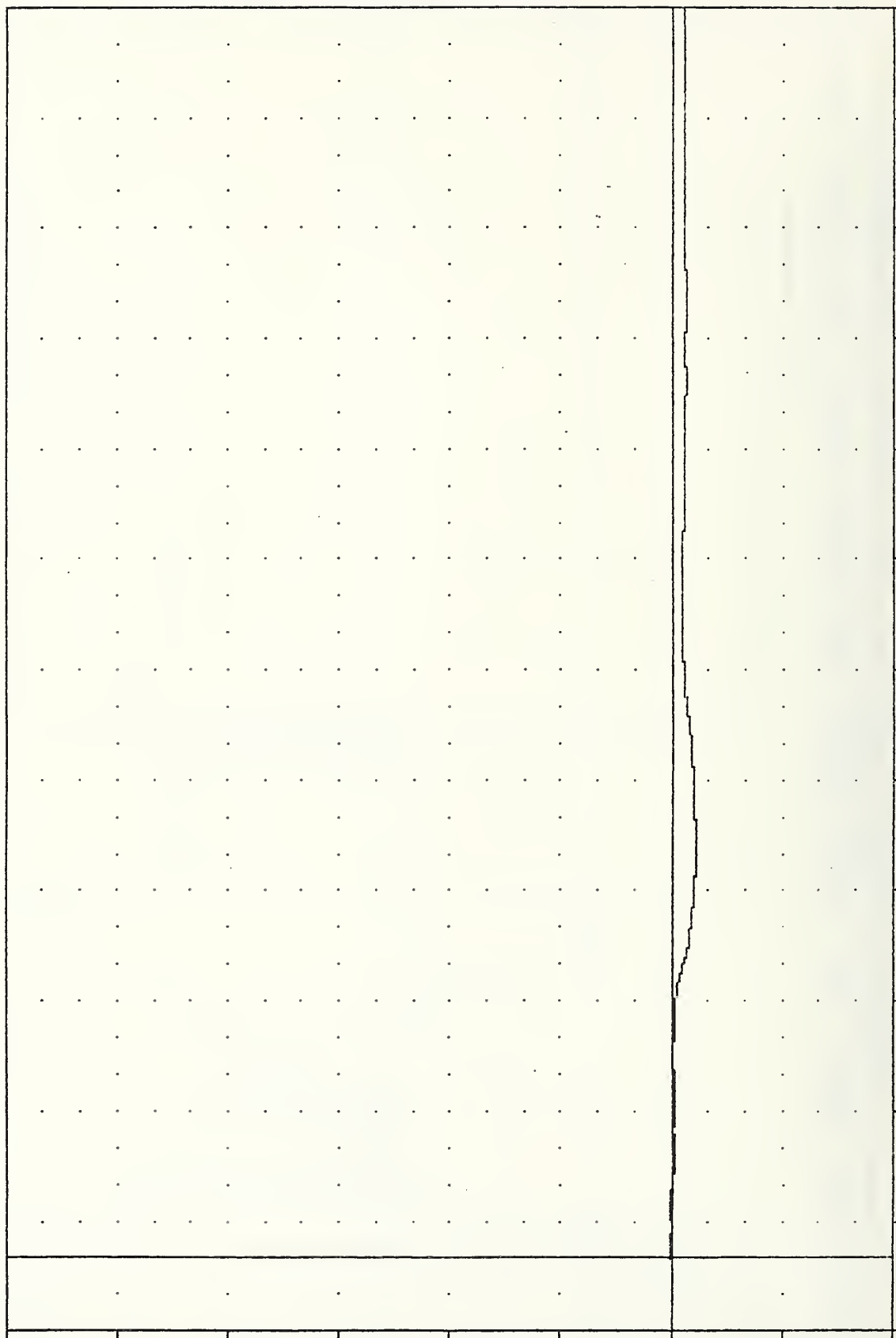
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
VEHICLE REAR DECK RESULTANT

VAT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 RDKXY

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40  
 MIN. MAX VALUES = -2.25e 110.63, 0.14 e 14.63

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING RDKXG

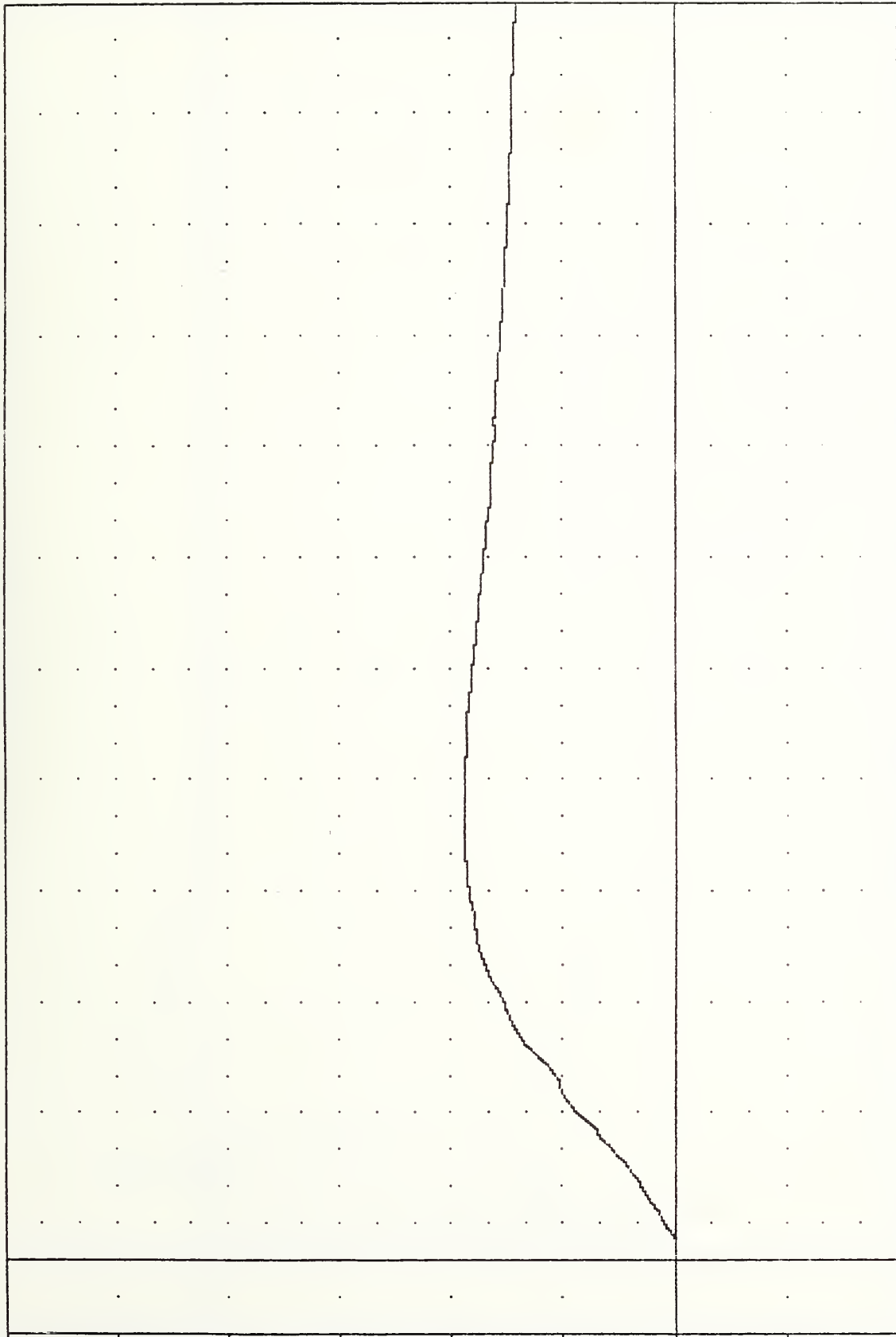
VR1 , 851213  
 SI PROTECTION PASS VEHICLE  
 85347000000  
 RDKYV

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300 / 949 / -40

MIN, MAX VALUES = -0.113 -11.63 , 18.86 e 117.63

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING RDKYV

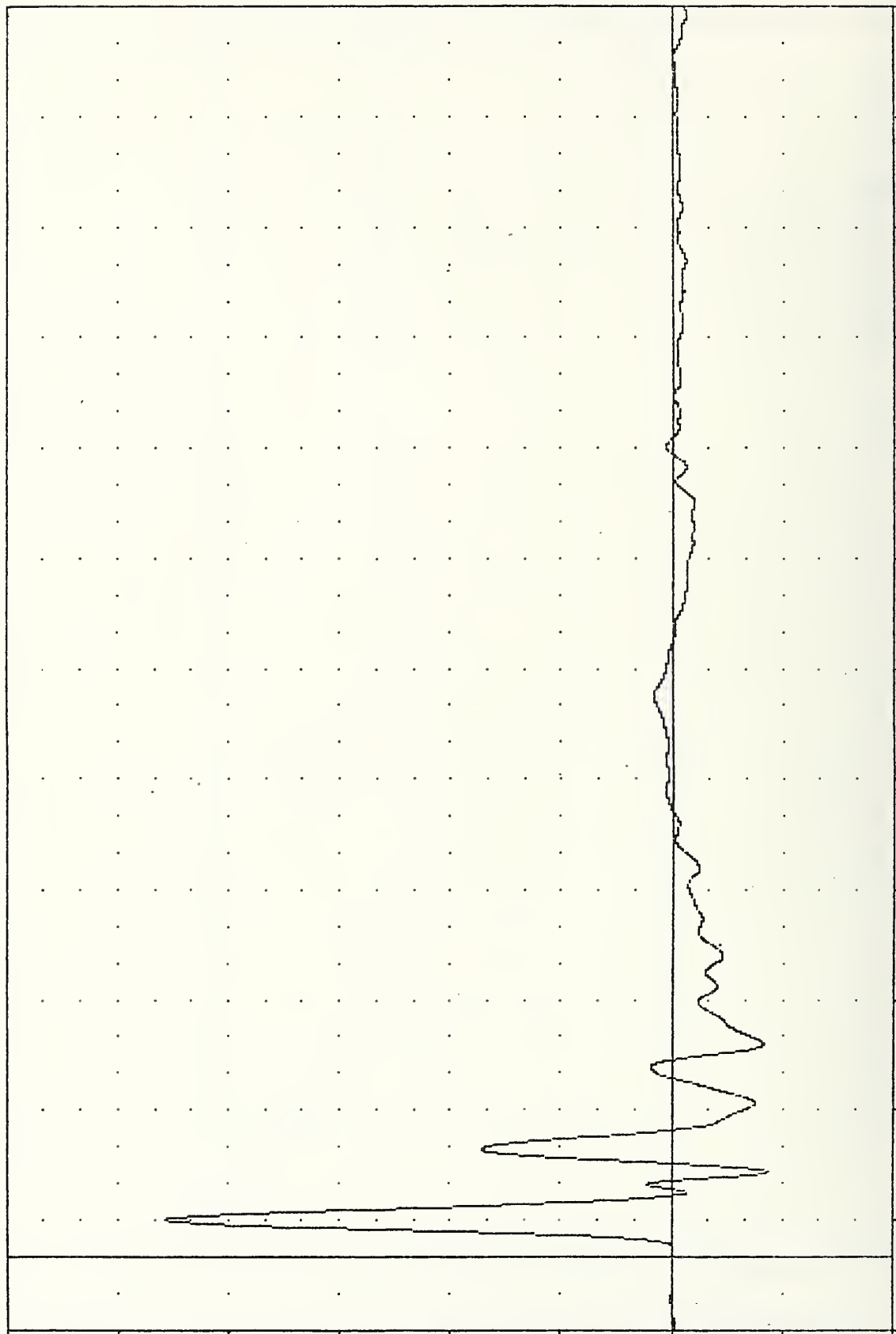
VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LRSYG

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -17.47e 23.13, 91.49 e 10.00

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
VEHICLE LEFT REAR SILL ACCELERATION Y AXIS

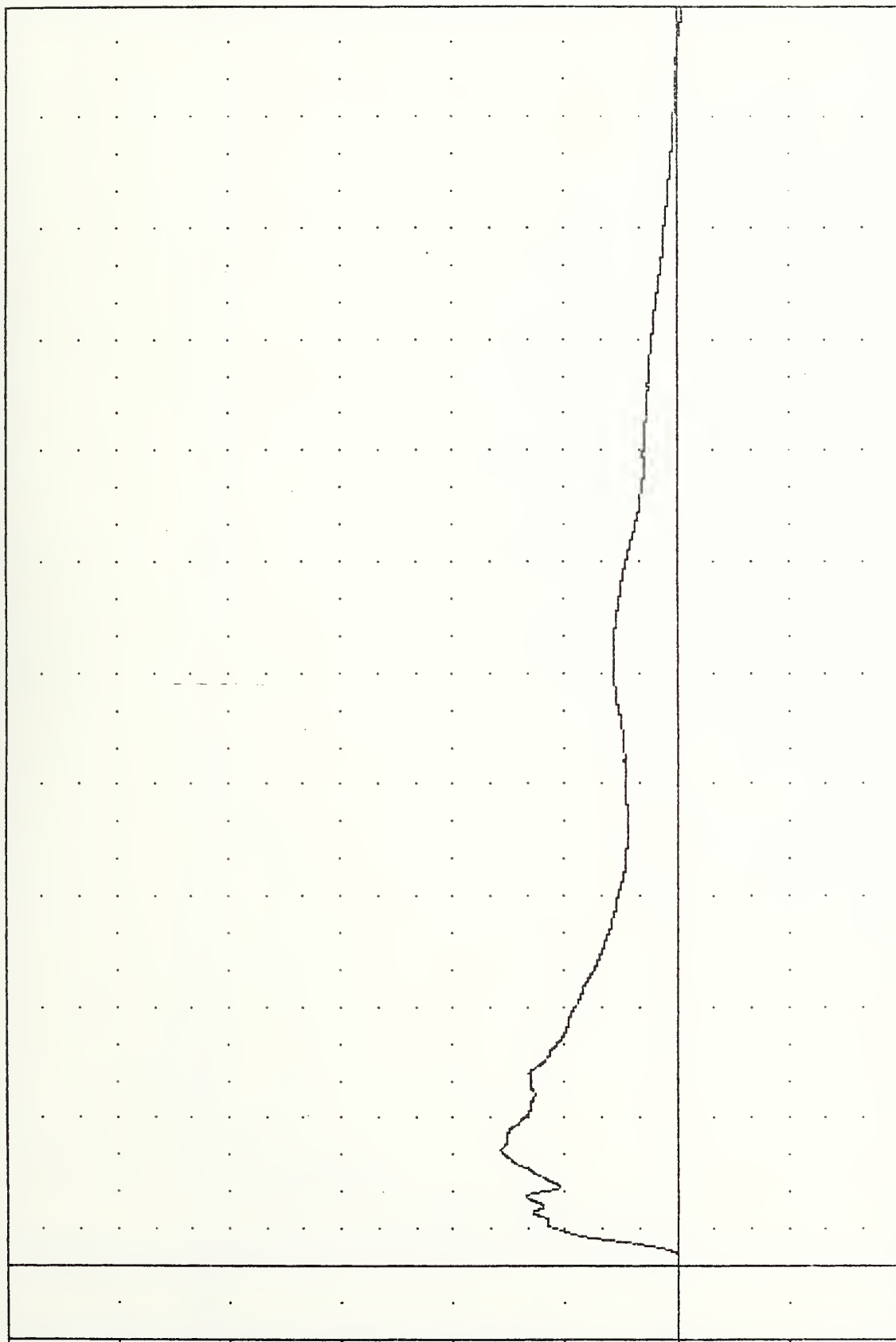
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LRSYV

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.568 337.75 , 15.74 8 31.25

VELOCITY (MPH)



-20.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00

0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

DELTA V USING LRSYG

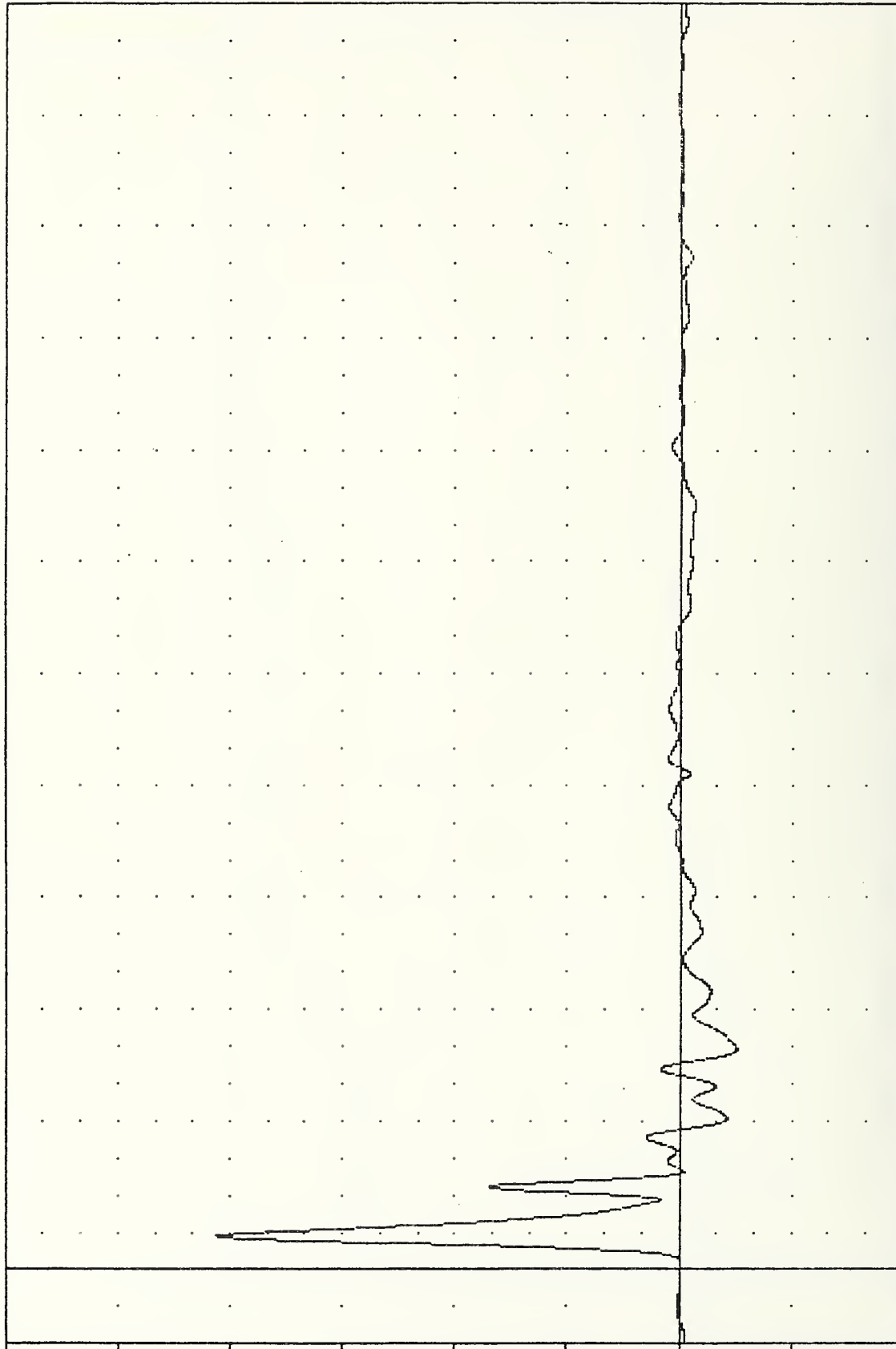


VAT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LFSY6

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40  
 MIN, MAX VALUES = -10.20g 59.38 , 82.37 g 9.00

B-90  
 ACCELERATION (G)  
 -40.00 -20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00



-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00  
 TIME (msec)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 VEHICLE LEFT FRONT SILL ACCELERATION Y AXIS

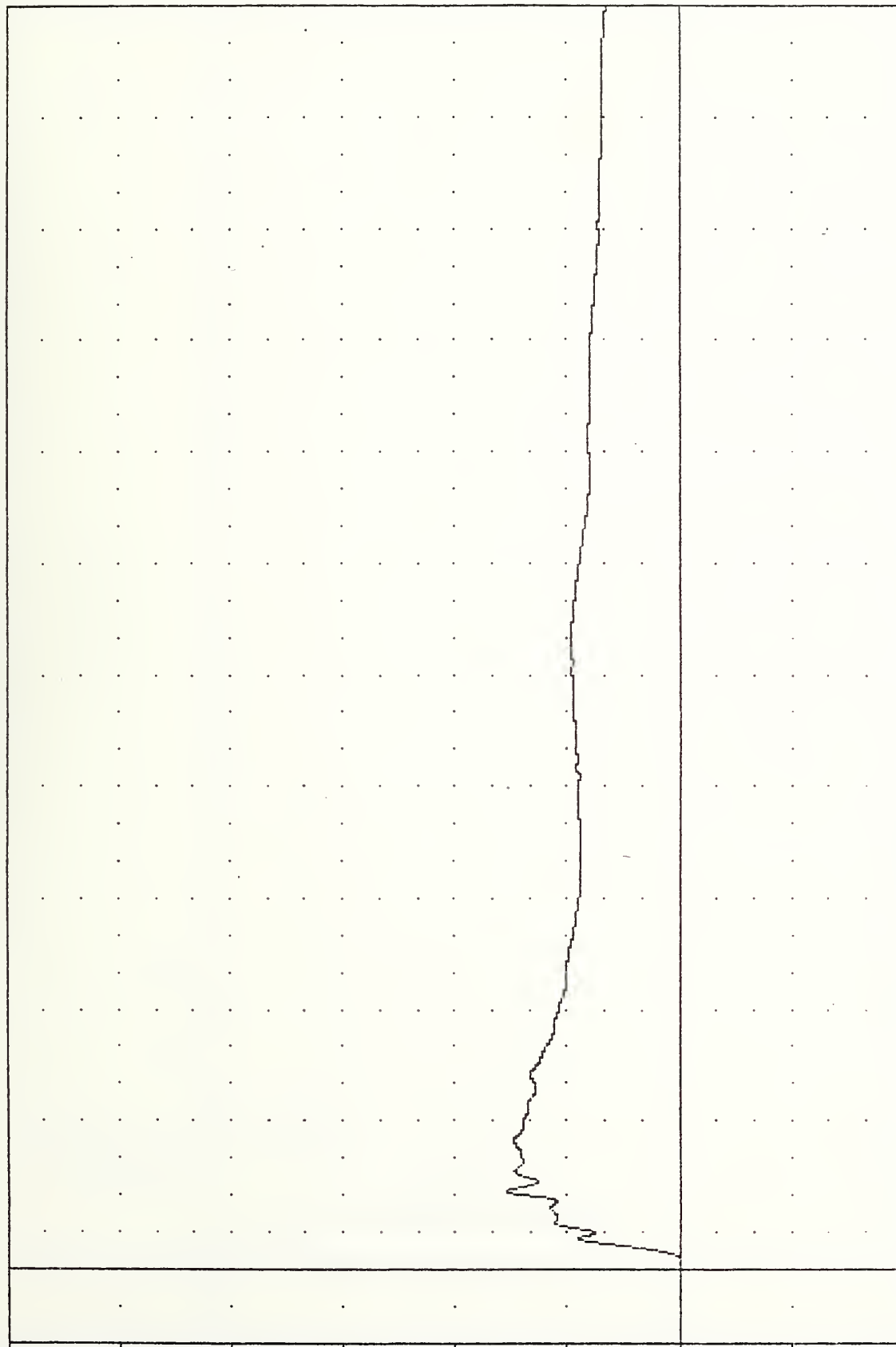
VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LFSYV

PLOT DATE 18-DEC-85 14:37:51

FILTER = 6LPF 300/ 949/ -40

MIN, MAX VALUES = -0.068 1.13, 15.45 \* 20.88

VELOCITY (MPH)



TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

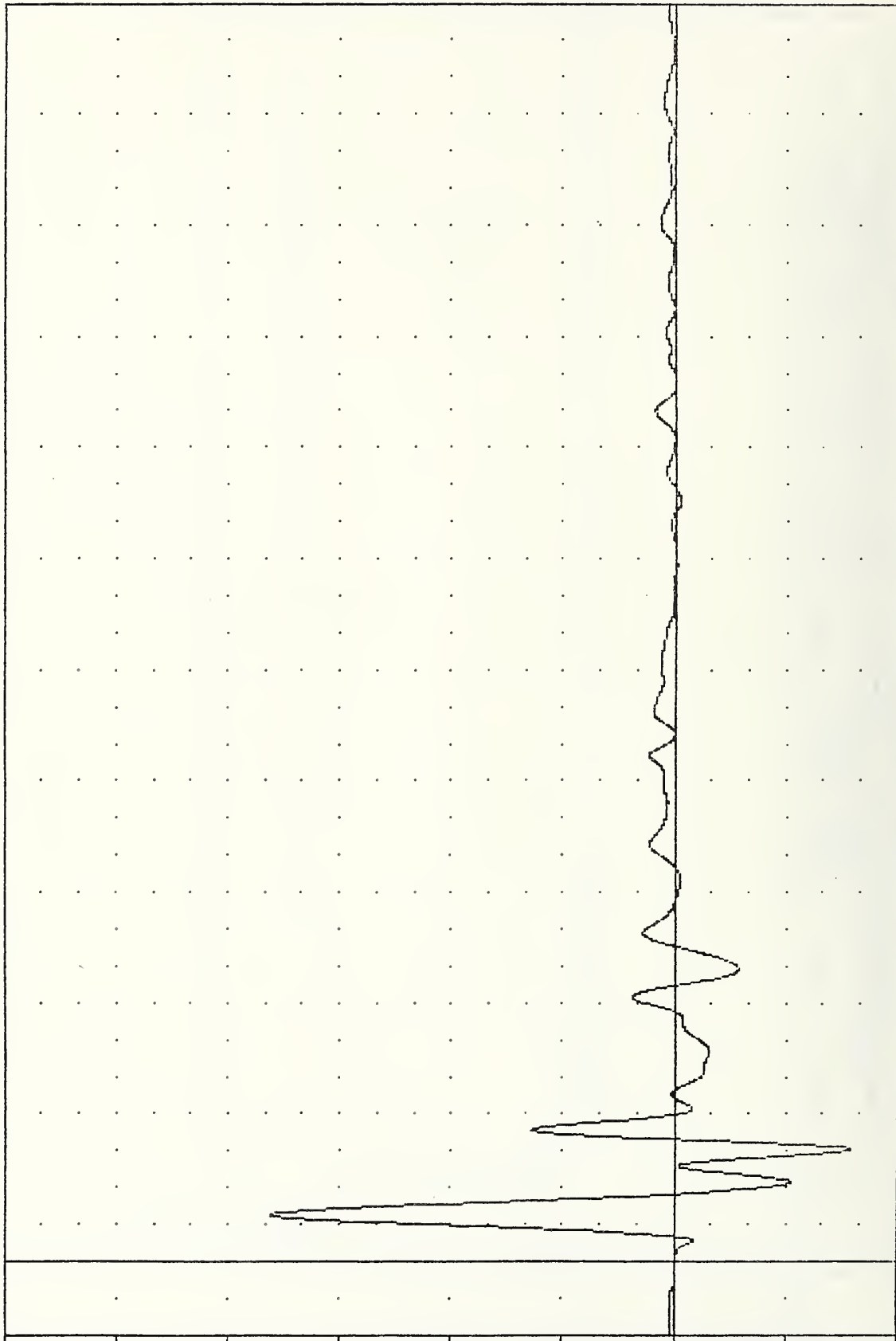
DELTA V USING LFSYG

WRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LF0Y61

PLOT DATE 18-DEC-85 14:37:51

FILTER = 8LPF 100/ 316/ -40  
MIN. MAX VALUES = -79.06e 30.50, 181.02 e 12.50

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
VEHICLE LEFT FRONT DOOR (POSITION 6) ACCELERATION Y AXIS

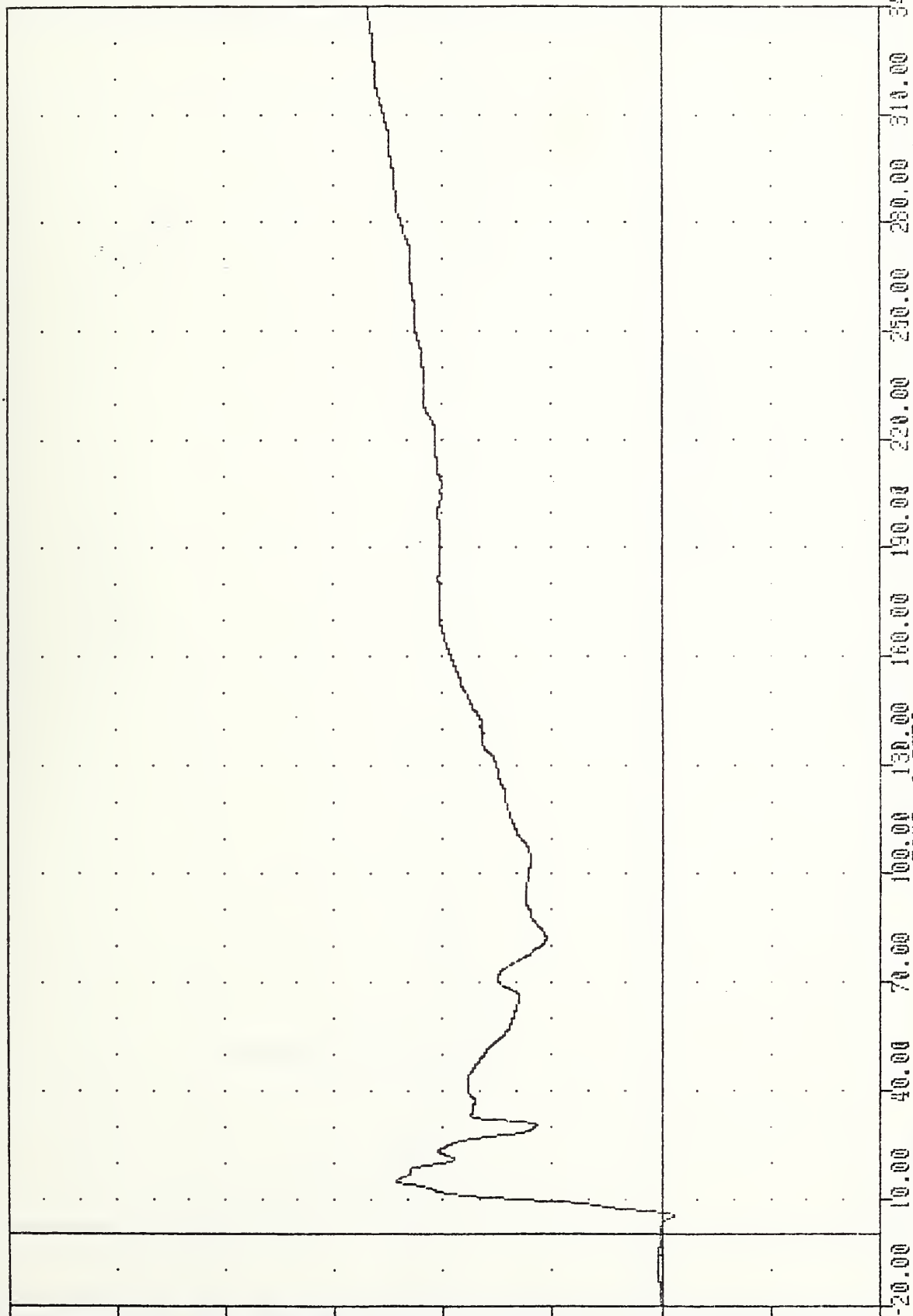
VAT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LFDYV1

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -1.23 5.25 26.87 339.88

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
DELTA V USING LFDYGI

VAT , 851213  
SI PROTECTION PASS VEHICLE  
85347000000  
TFRX6

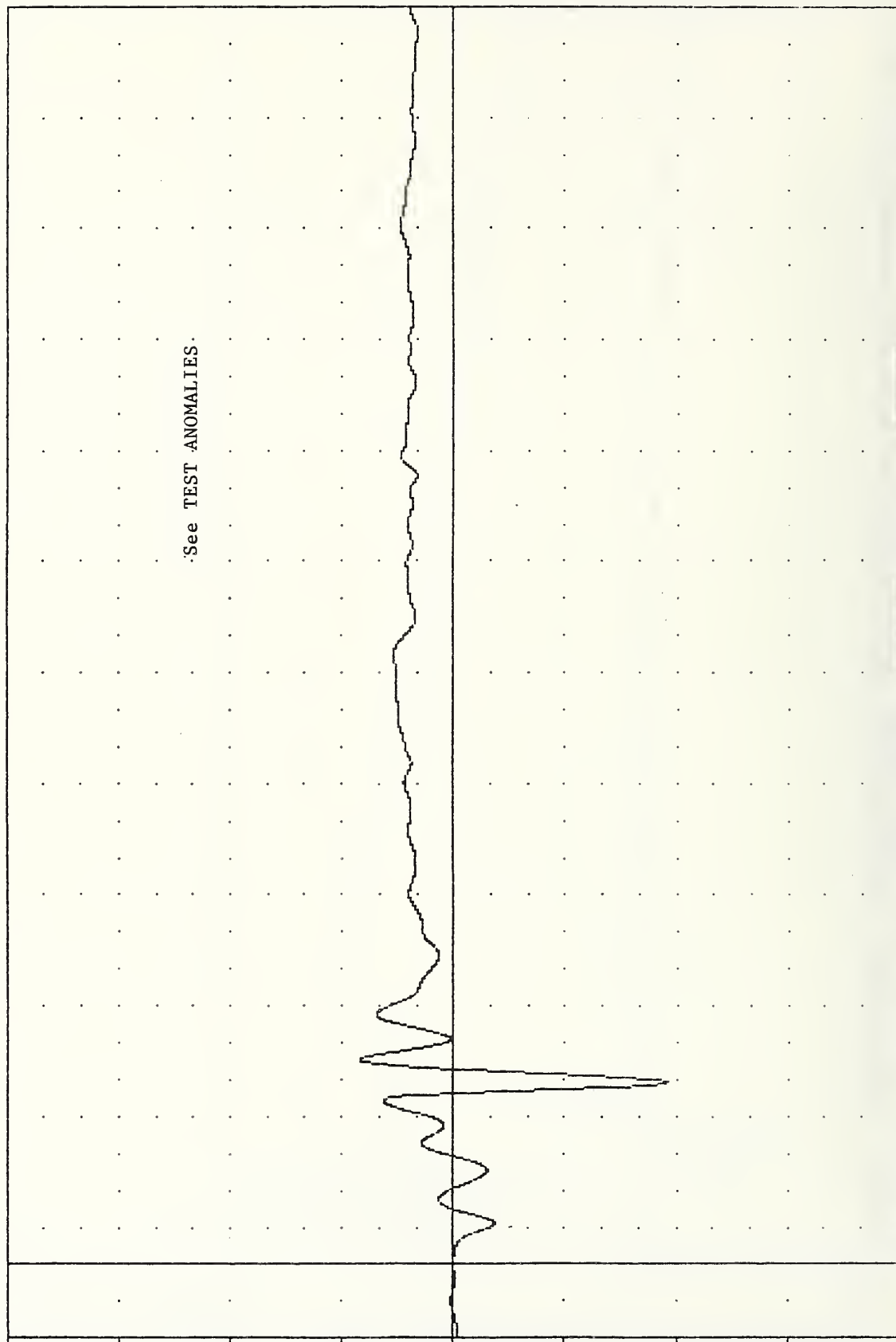
PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -19.16 49.25 , 8.39 55.38

ACCELERATION (G)

B-94



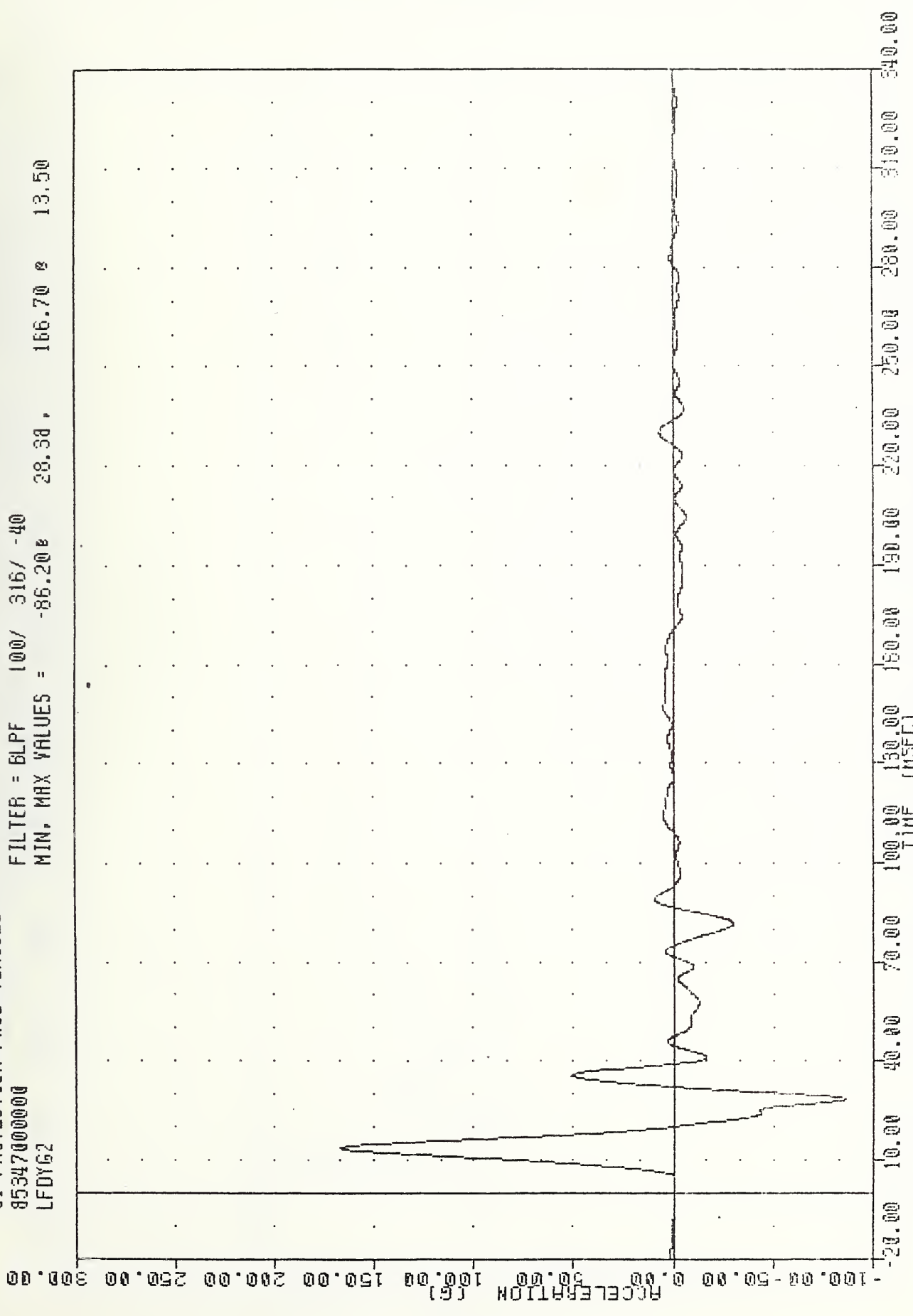
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
VEHICLE TRUNK FLOOR RIGHT ACCELERATION X AXIS



VRT  
SI PROTECTION PROD VEHICLE  
85347000000  
LFDY62

PLOT DATE 18-DEC-85 14:37:51  
FILTER = BLPF 100/ 316/ -40  
MIN, MAX VALUES = -86.200 28.38 , 166.70 13.50



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
VEHICLE LEFT FRONT DOOR (POSITION 8) ACCELERATION Y AXIS

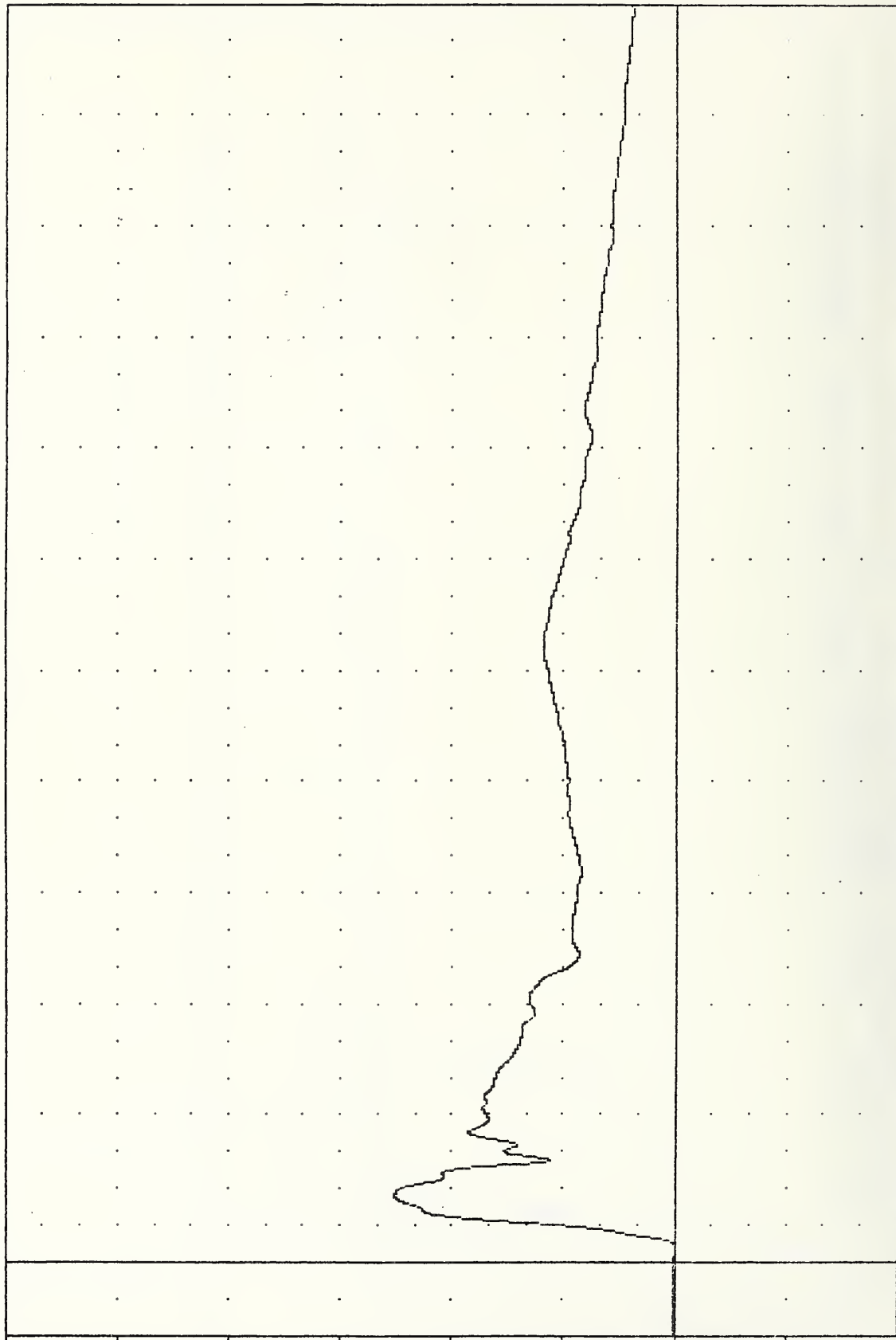
VR1 , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LFDYV2

PLOT DATE 18-DEC-85 14:37:51

FILTER = 8LPF 300/ 949/ -40

MIN, MAX VALUES = -0.098 3.75, 25.09 8 17.88

VELOCITY (MPH)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

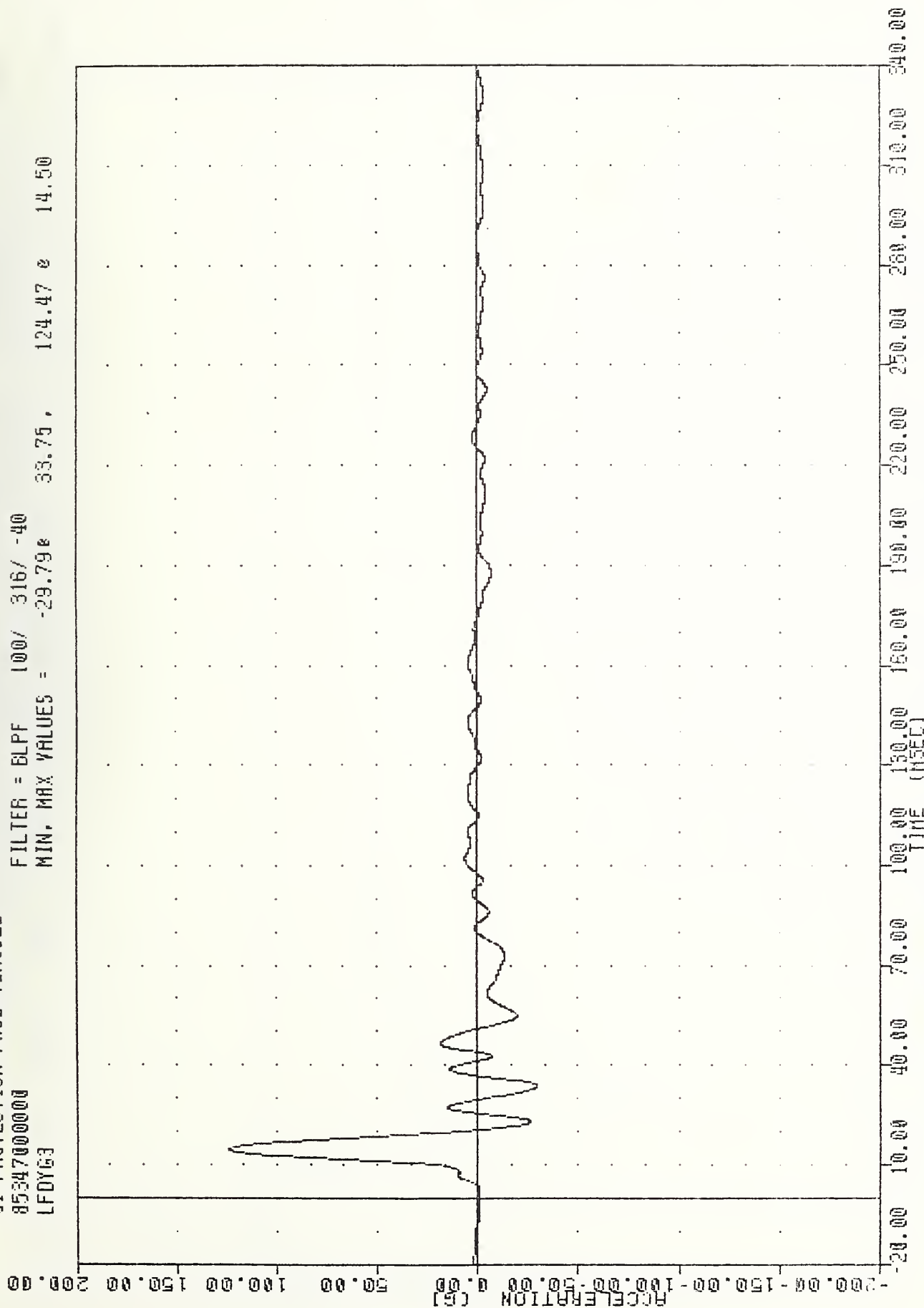
DELTA V USING LFDYV2

VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LFDY63

PLOT DATE 19-DEC-85 08:56:52

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -29.79e 33.75, 124.47 e 14.50



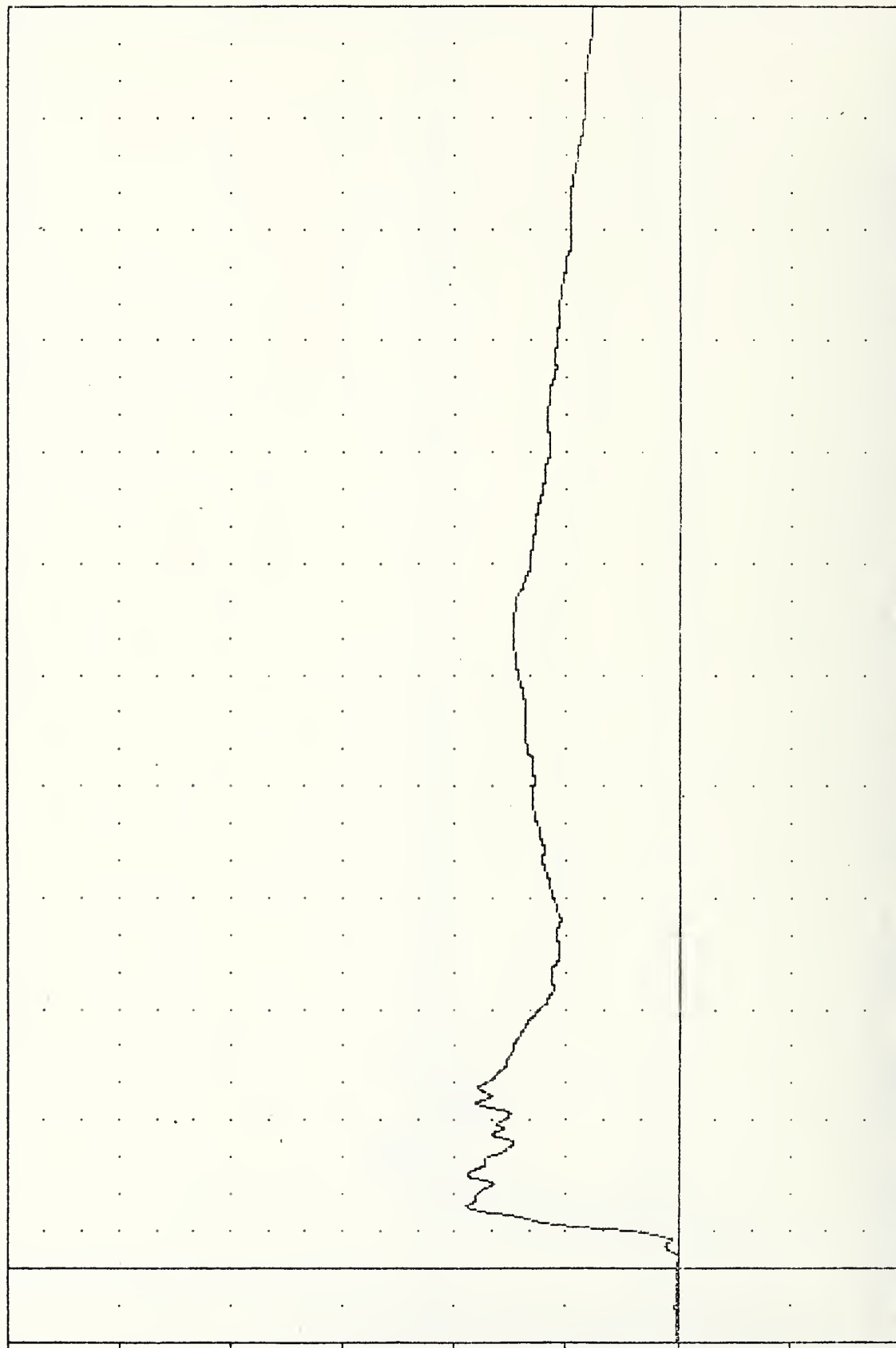
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LFDYV3

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.07 e 2.88 , 18.90 e 16.63

VELOCITY (MPH)



20.00 30.00 40.00 50.00 60.00  
 10.00 20.00 30.00 40.00 50.00 60.00  
 70.00 80.00 90.00 100.00 110.00 120.00  
 130.00 140.00 150.00 160.00 170.00 180.00  
 190.00 200.00 210.00 220.00 230.00 240.00  
 250.00 260.00 270.00 280.00 290.00 300.00  
 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING LFDYV3

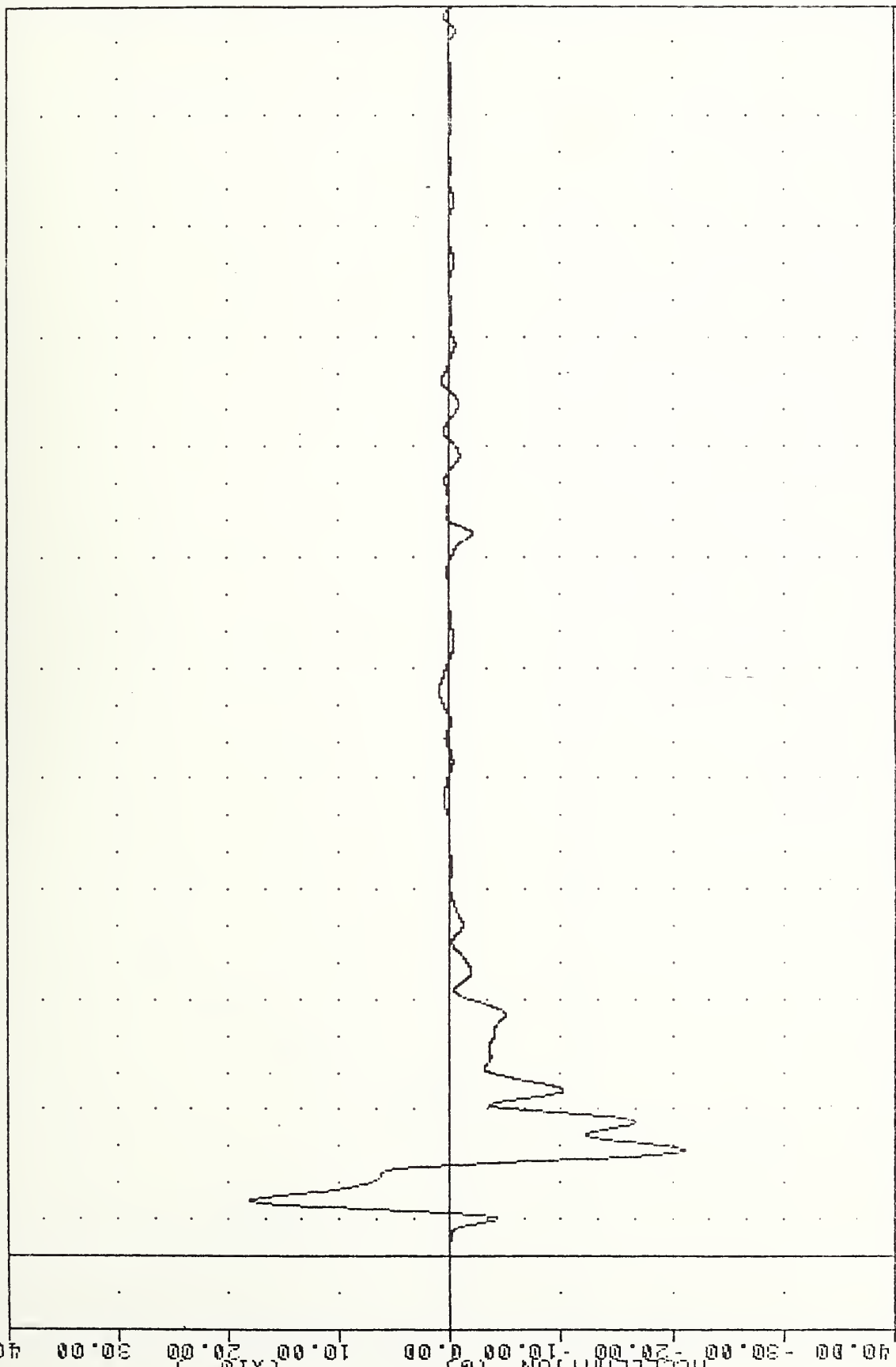
VRT , 851213  
SI PROTECTION PH00 VEHICLE  
85347000000  
LR0Y61

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -211.07g 29.88g 181.15g 15.00

ACCELERATION (g)  
(X10<sup>4</sup>)



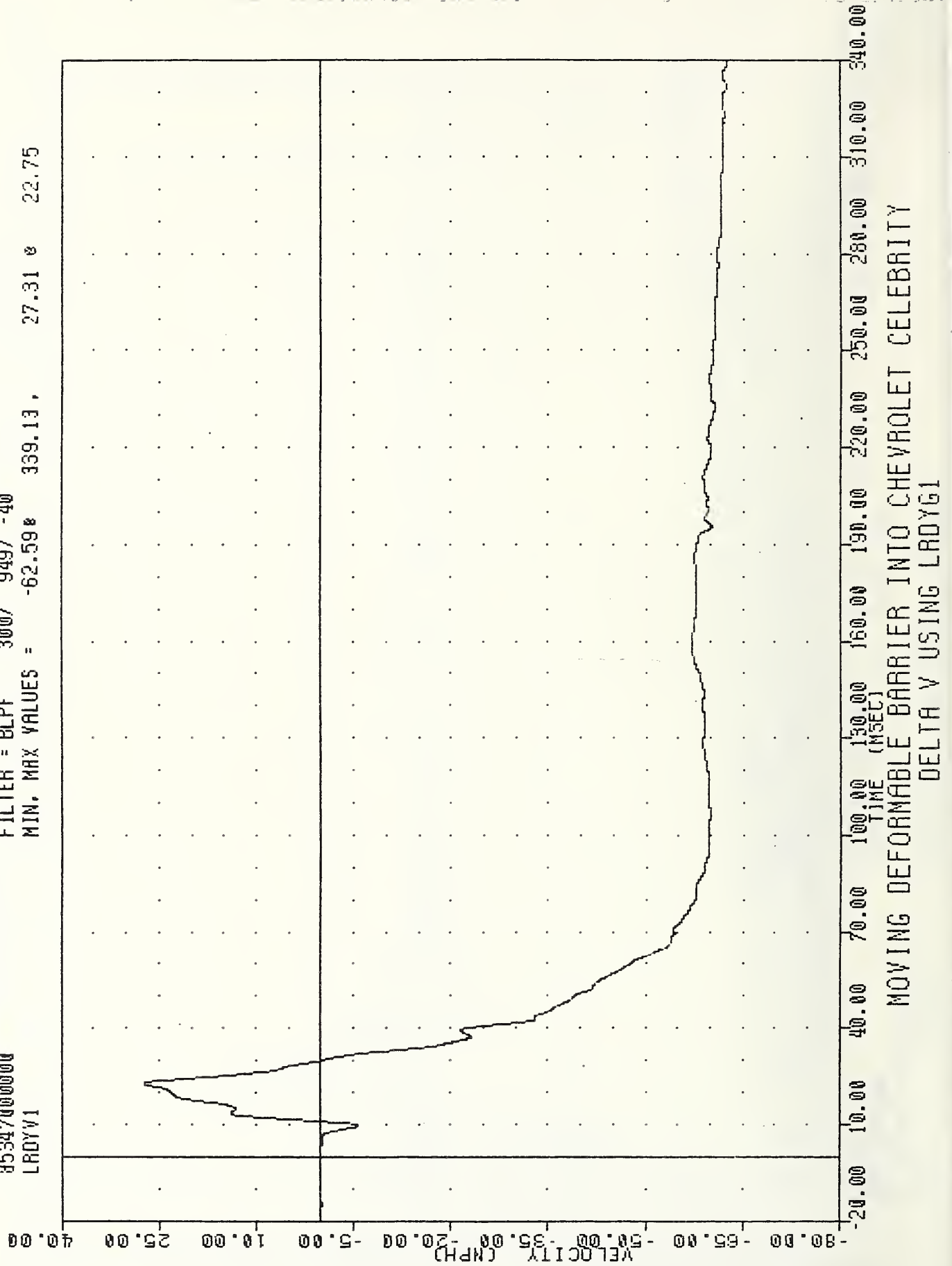
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
VEHICLE LEFT REAR DOOR (POSITION 10) ACCELERATION Y AXIS



VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
LADYVI

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -62.59% 339.13, 27.31 % 22.75

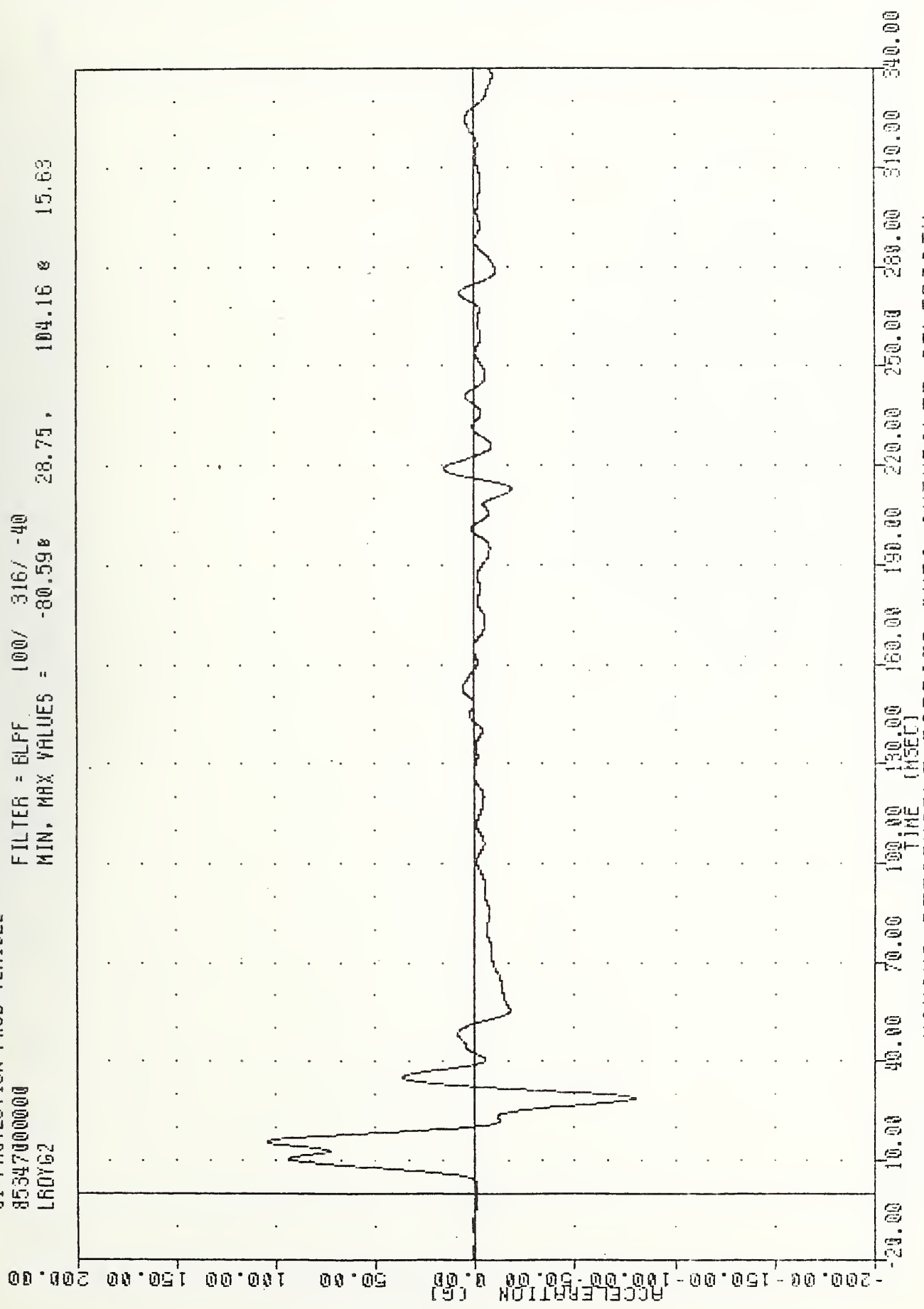


VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 LROYG2

PLOT DATE 18-DEC-85 14:37:51

FILTER = ELPF 100/ 316/ -40

MIN. MAX VALUES = -80.598 28.75, 104.16 8 15.63



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 VEHICLE LEFT REAR DOOR (POSITION 11) ACCELERATION Y AXIS

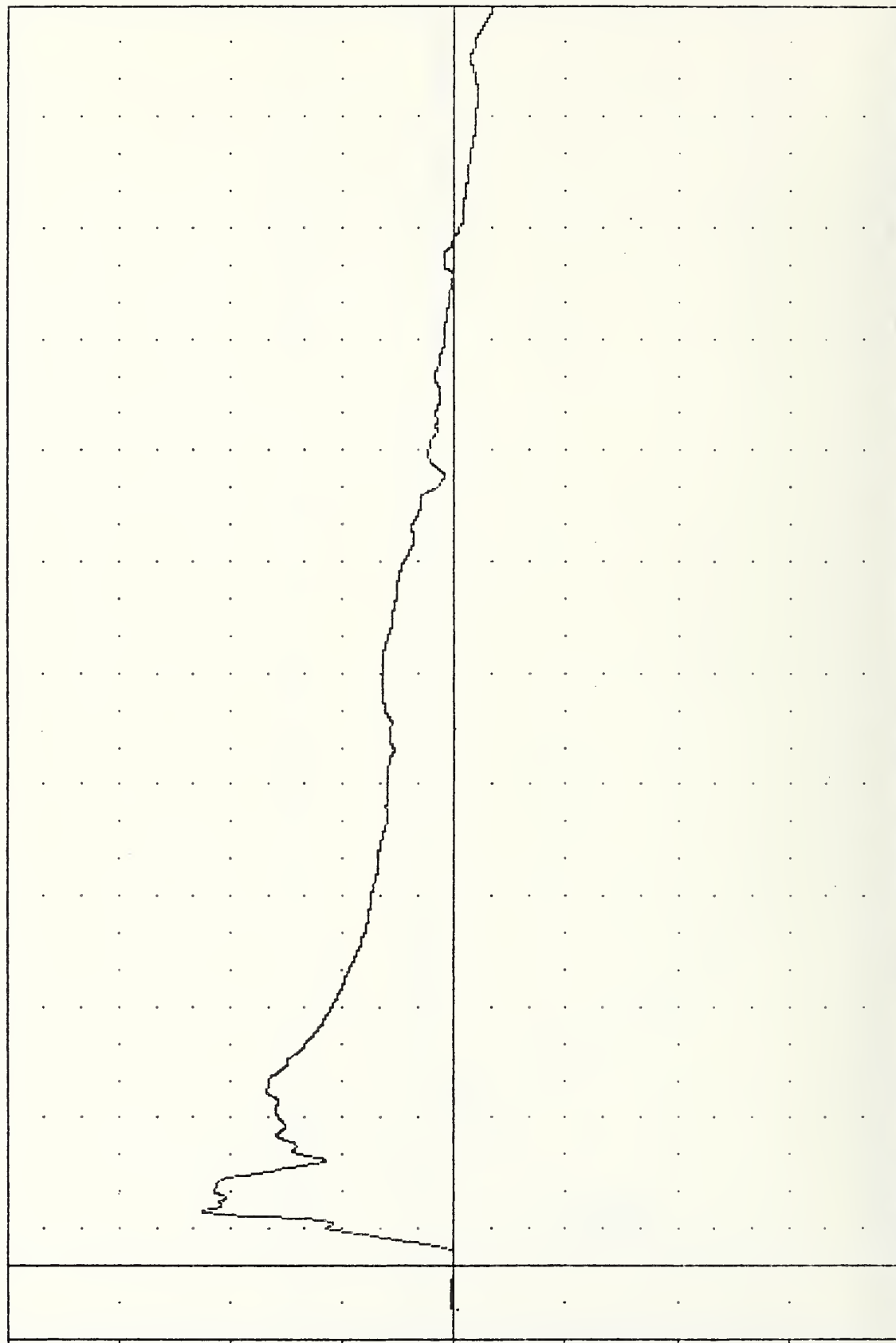
VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 853470000000  
 LRDYV2

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -3.37e 338.75, 22.57 e 14.63

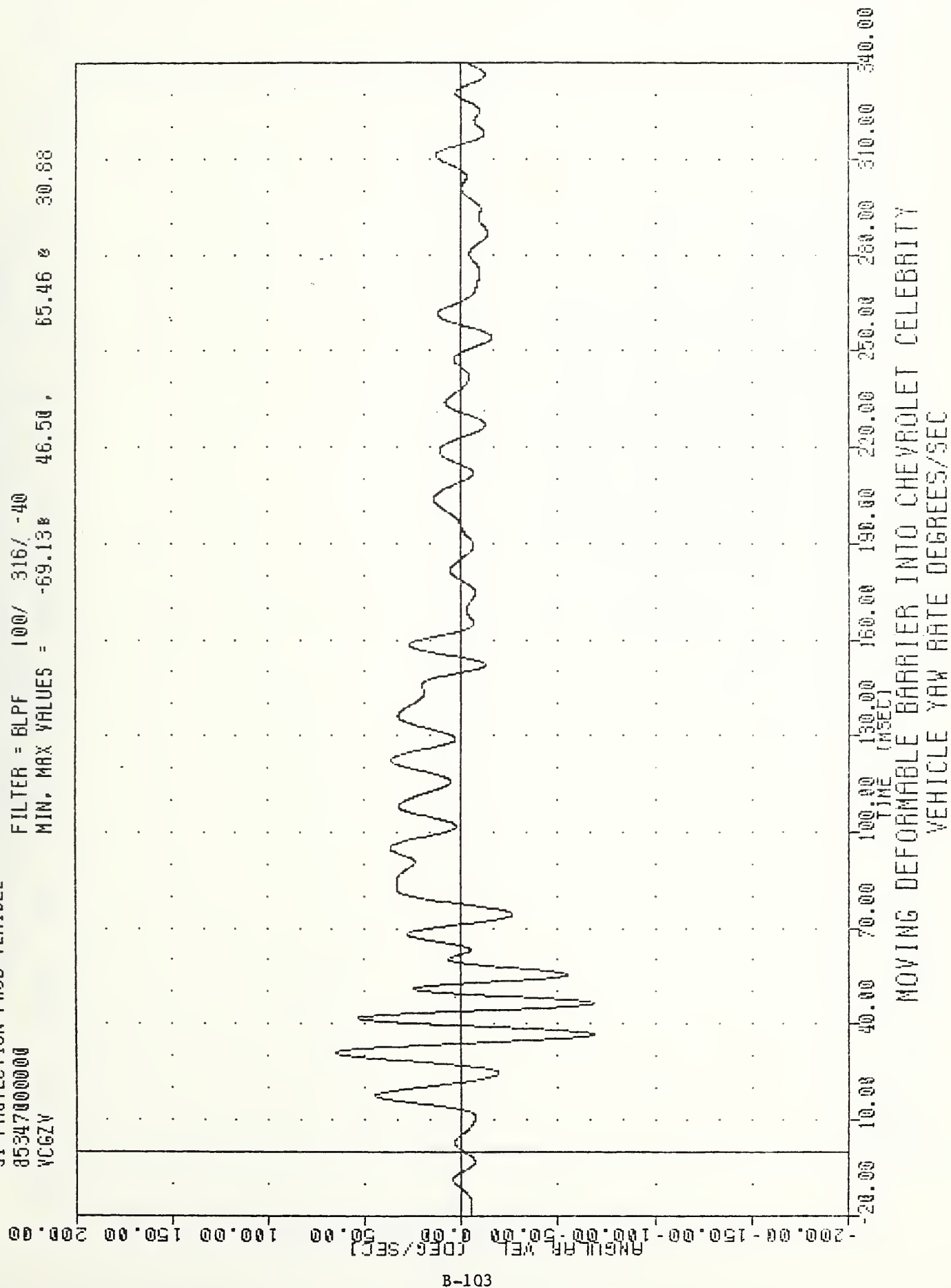
40.00  
30.00  
20.00  
10.00  
0.00  
-10.00  
-20.00  
-30.00  
-40.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
 TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING LRDYV2

VRT 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 VCGZY  
 PLOT DATE 18-DEC-85 14:37:51  
 FILTER = BLPF 100/ 316/ -40  
 MIN. MAX VALUES = -69.13 46.50 , 65.46 30.88

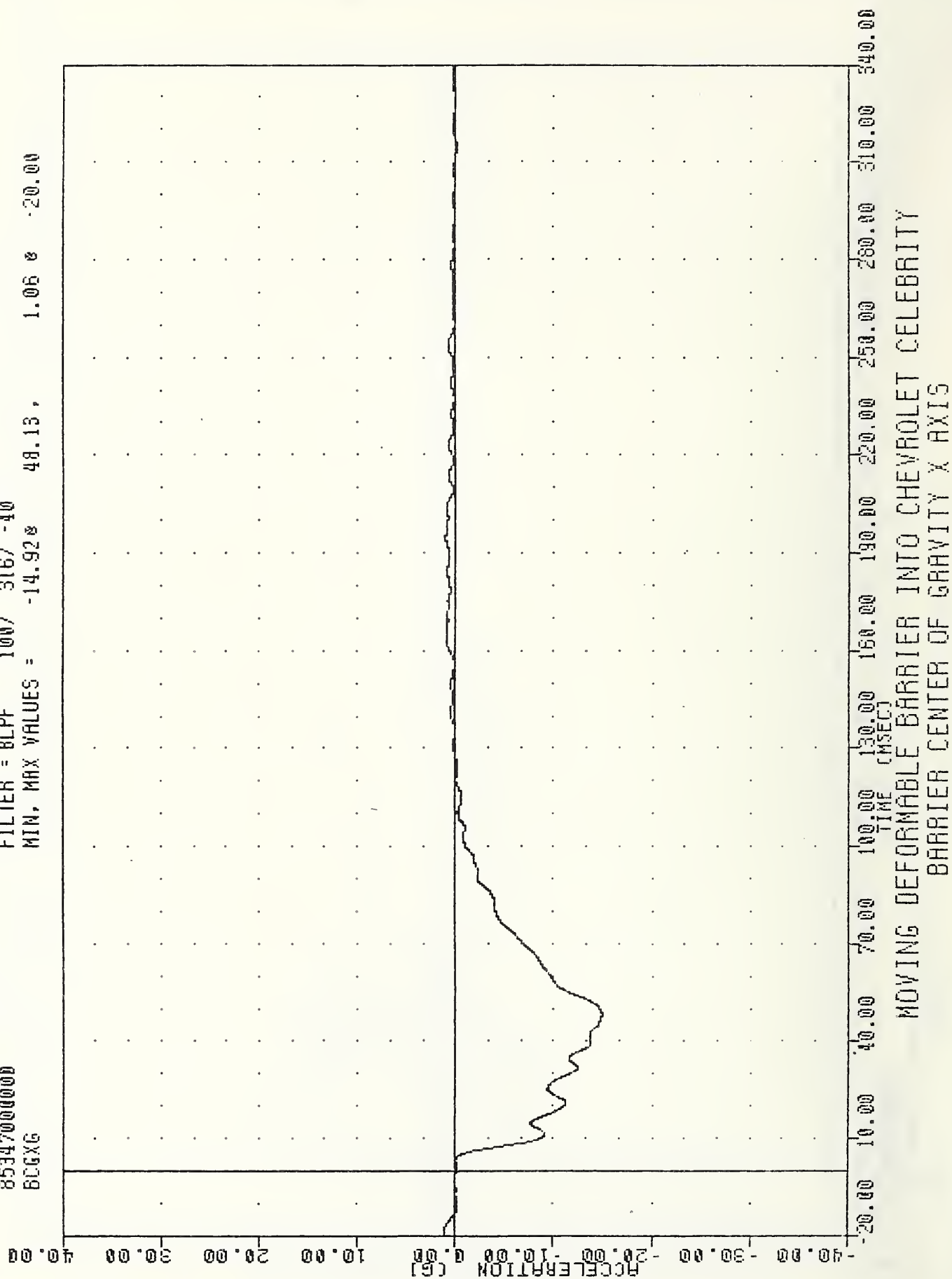


VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
BCGCG

PLOT DATE 18-DEC-85 14:37:51

FILTER = 8LPF 100/ 316/ -40

MIN, MAX VALUES = -14.928 48.13, 1.06 8 -20.00





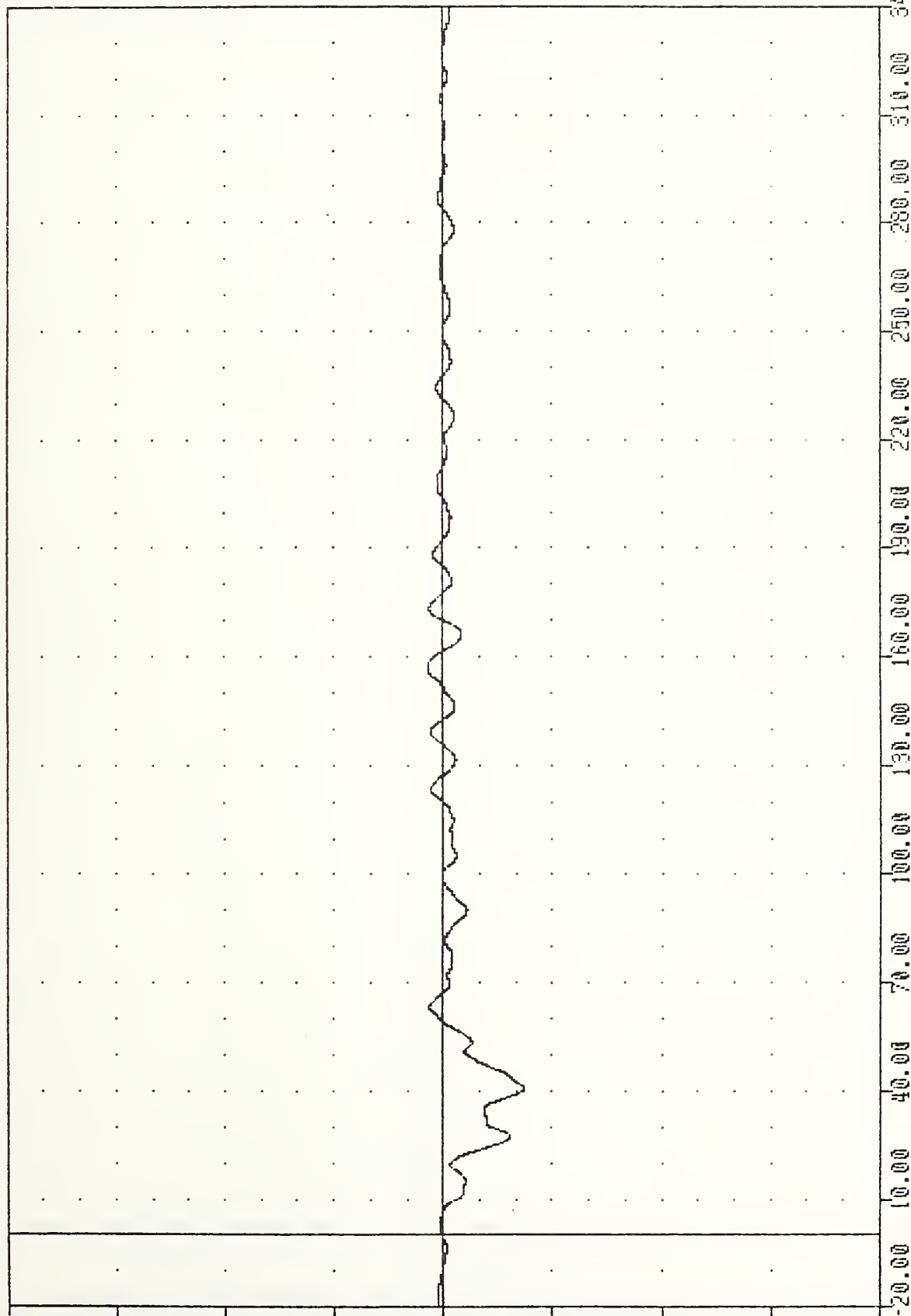
VAT , 851213  
SI PROTECTION PROD VEHICLE  
853470000000  
BCGY6

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -7.46 e 40.75 , 1.38 e 156.63

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
BARRIER CENTER OF GRAVITY Y AXIS

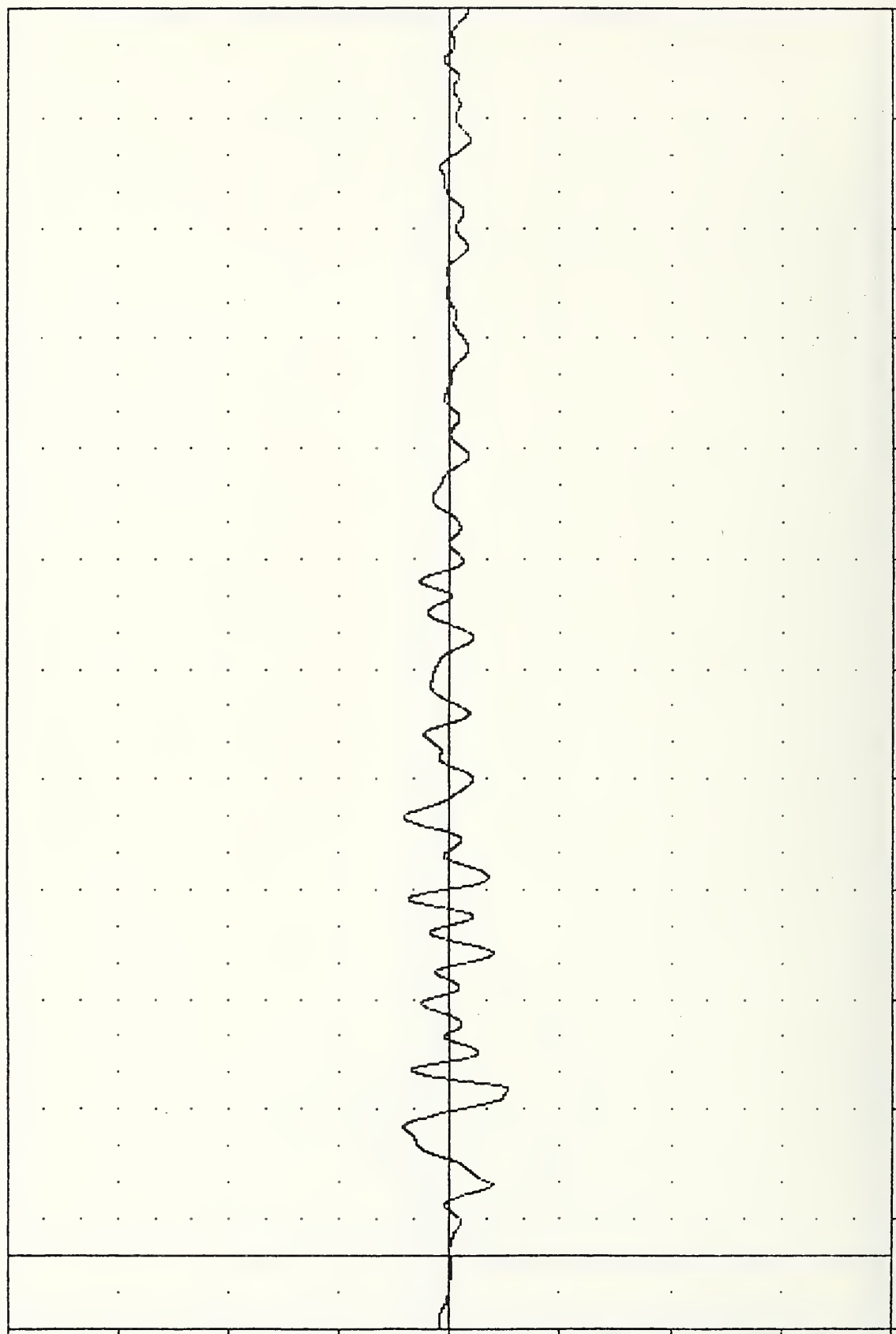
VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
BCGZG

PLOT DATE 18-DEC-85 14:37:51

FILTER = 6LPF 100/ 316/ -40

MIN. MAX VALUES = -5.33 45.38 , 4.20 35.00

ACCELERATION (G)

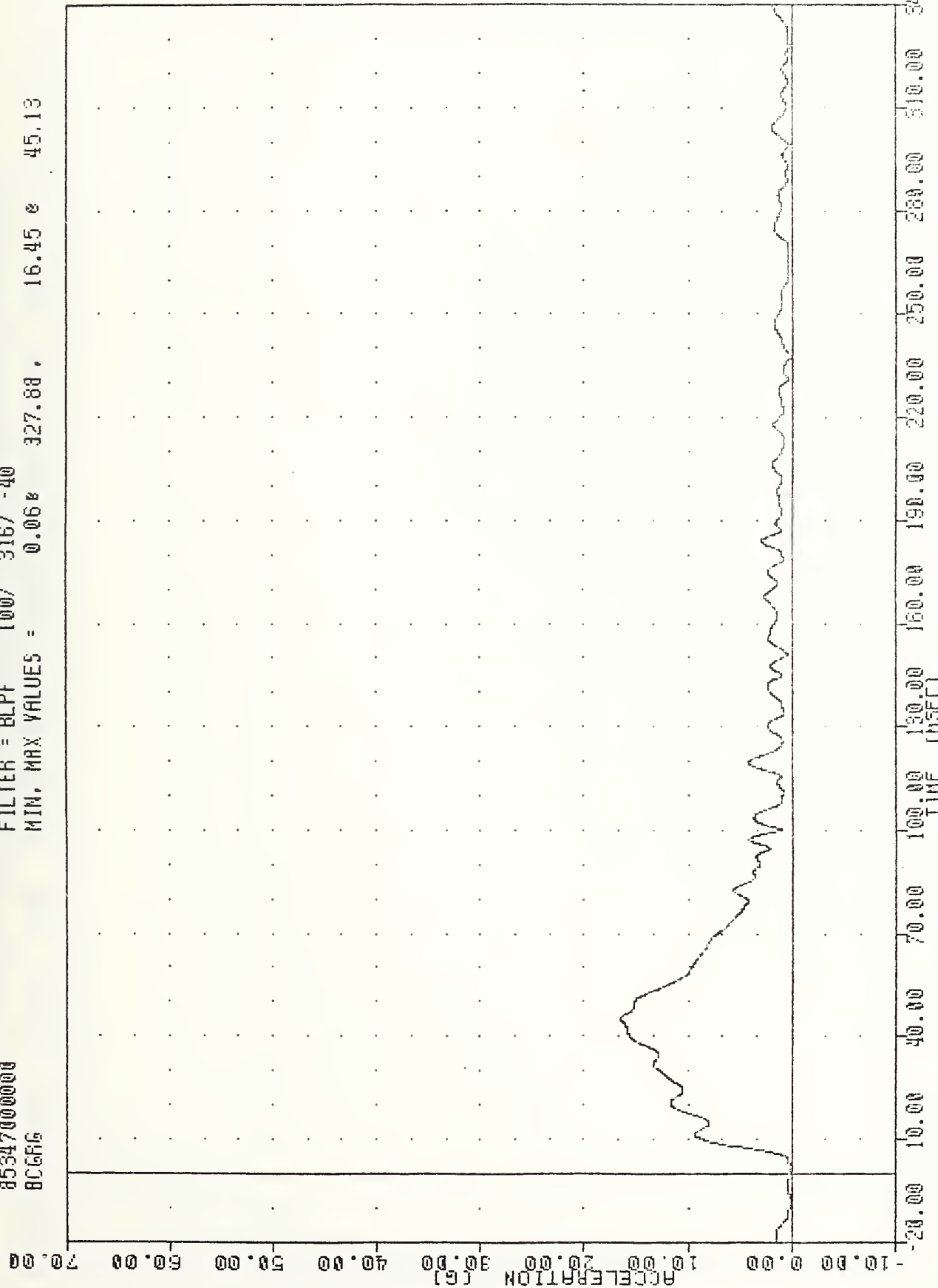


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
BARRIER CENTER OF GRAVITY Z AXIS

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 BCGRG  
 PLOT DATE 18-DEC-85 14:39:55  
 FILTER = BLPF 100/ 316/ -40  
 MIN. MAX VALUES = 0.06g 327.8g 16.45 g 45.13



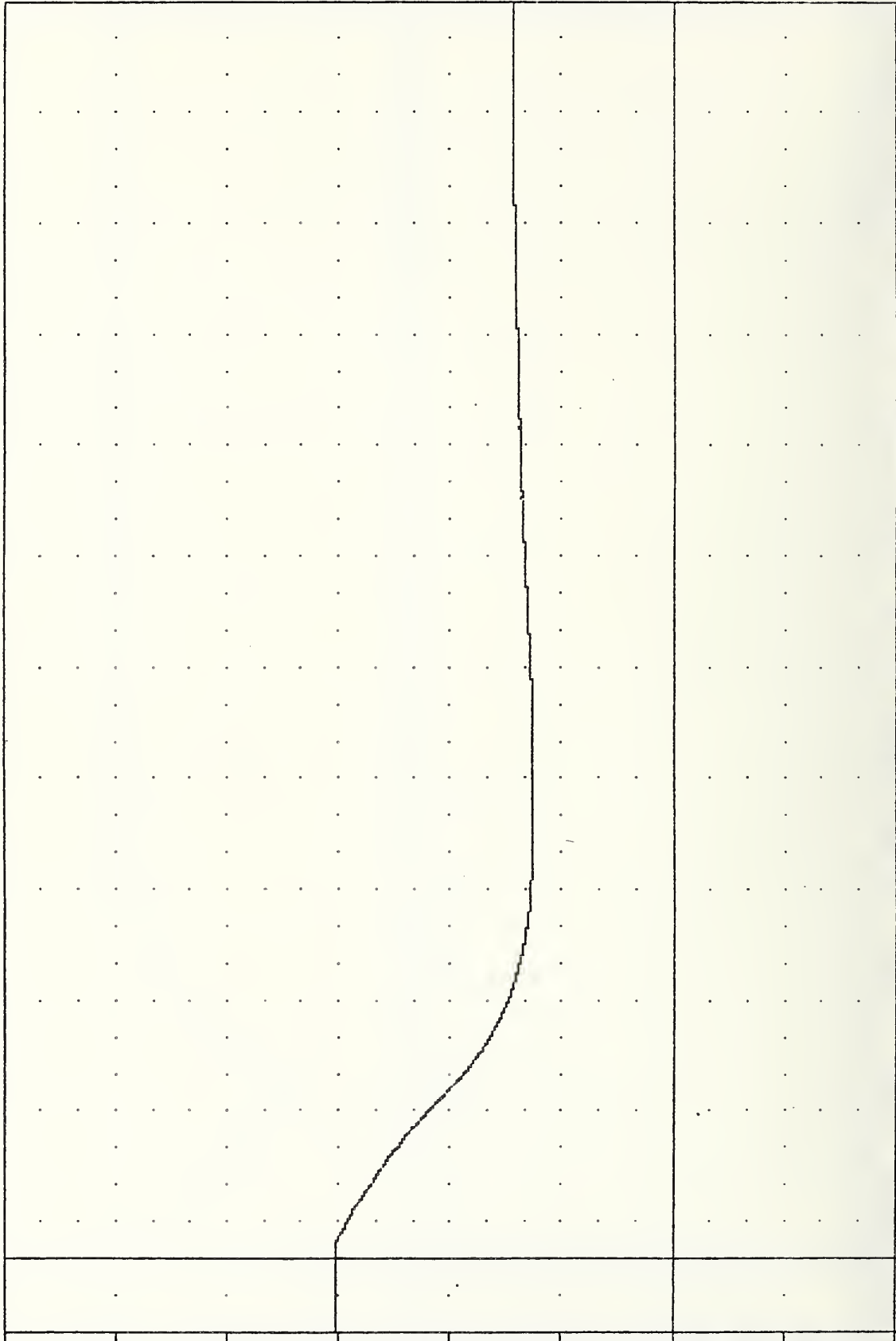
MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 BARRIER CG RESULTANT

VRT , 851213  
 SI PROTECTION PROD VEHICLE  
 853470000000  
 BCGXV

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40  
 MIN, MAX VALUES = 12.550 121.88, 30.26 8 -4.25

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
 DELTA V USING BCGX6

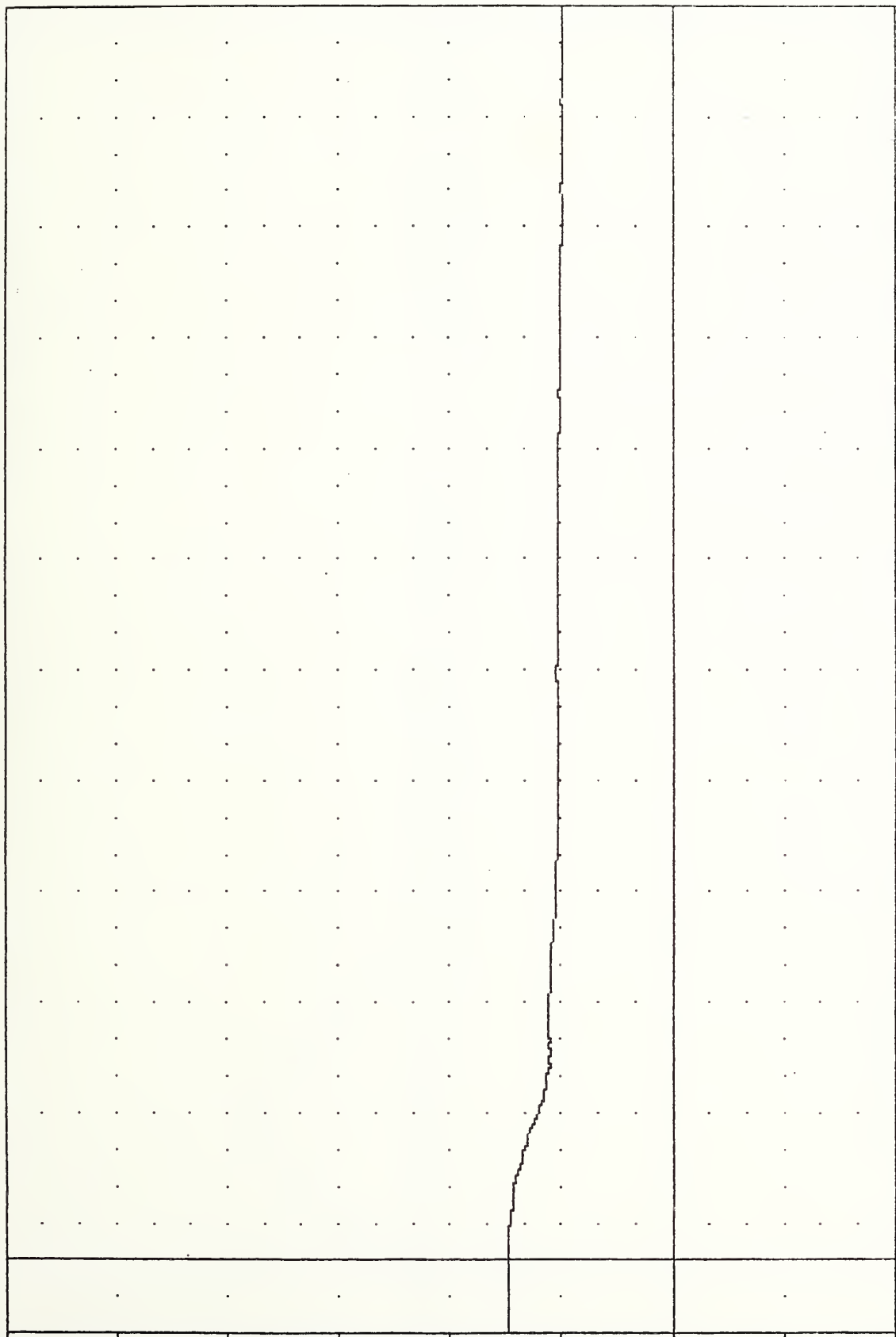
VAT .851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 BCGYV

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 9.830 340.00 , 14.76 \* -10.50

VELOCITY (MPH)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

DELTA V USING BCGYG

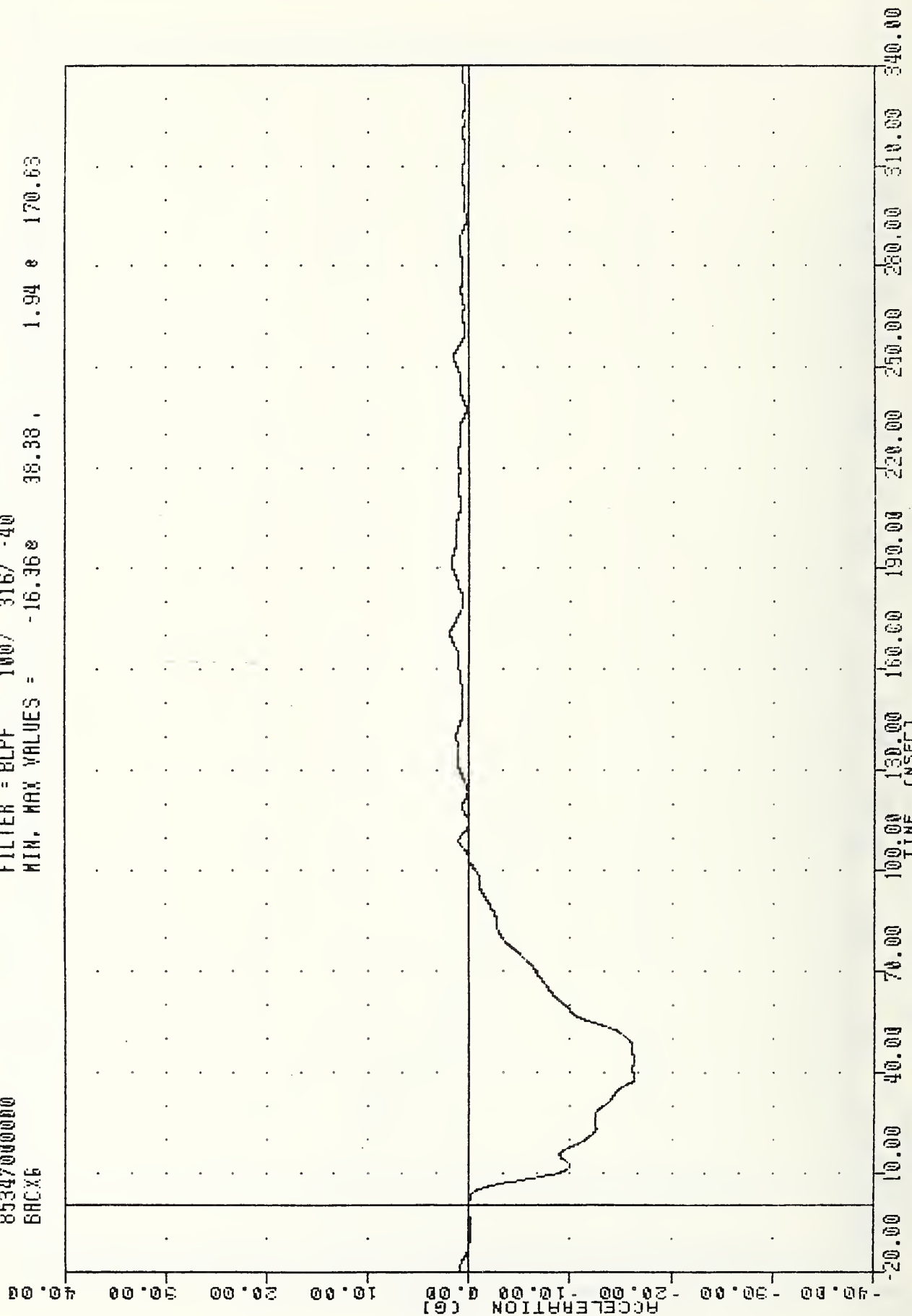


WRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
BRCX6

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -16.36e 38.38 , 1.94 e 170.63



B-110

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
BARRIER REAR CROSSMEMBER ACCELERATION X AXIS

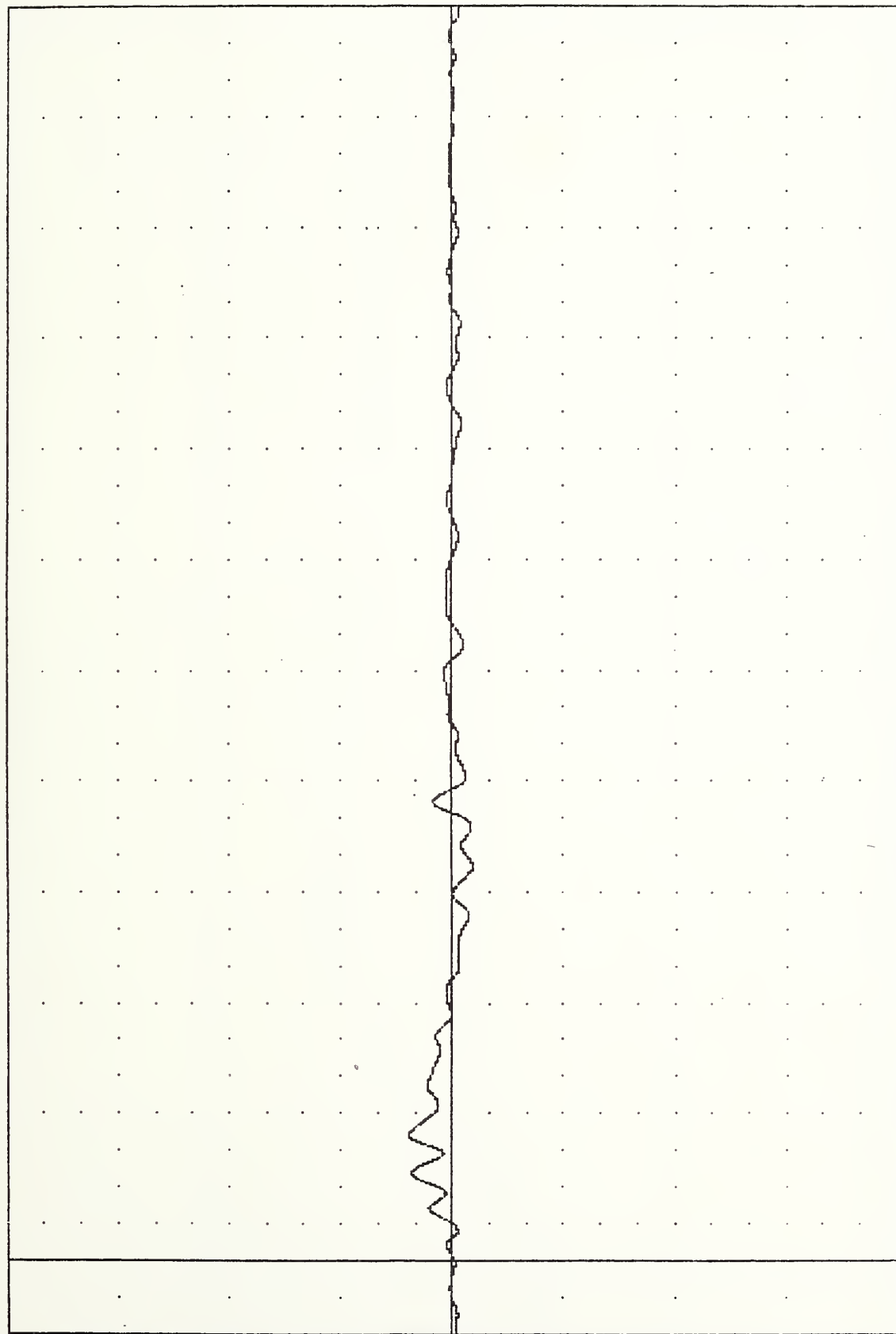
VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
BRCYG

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -1.89g 106.75, 3.88 g 34.13

ACCELERATION (G)



B-111

-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY  
BARRIER REAR CROSSMEMBER ACCELERATION Y AXIS

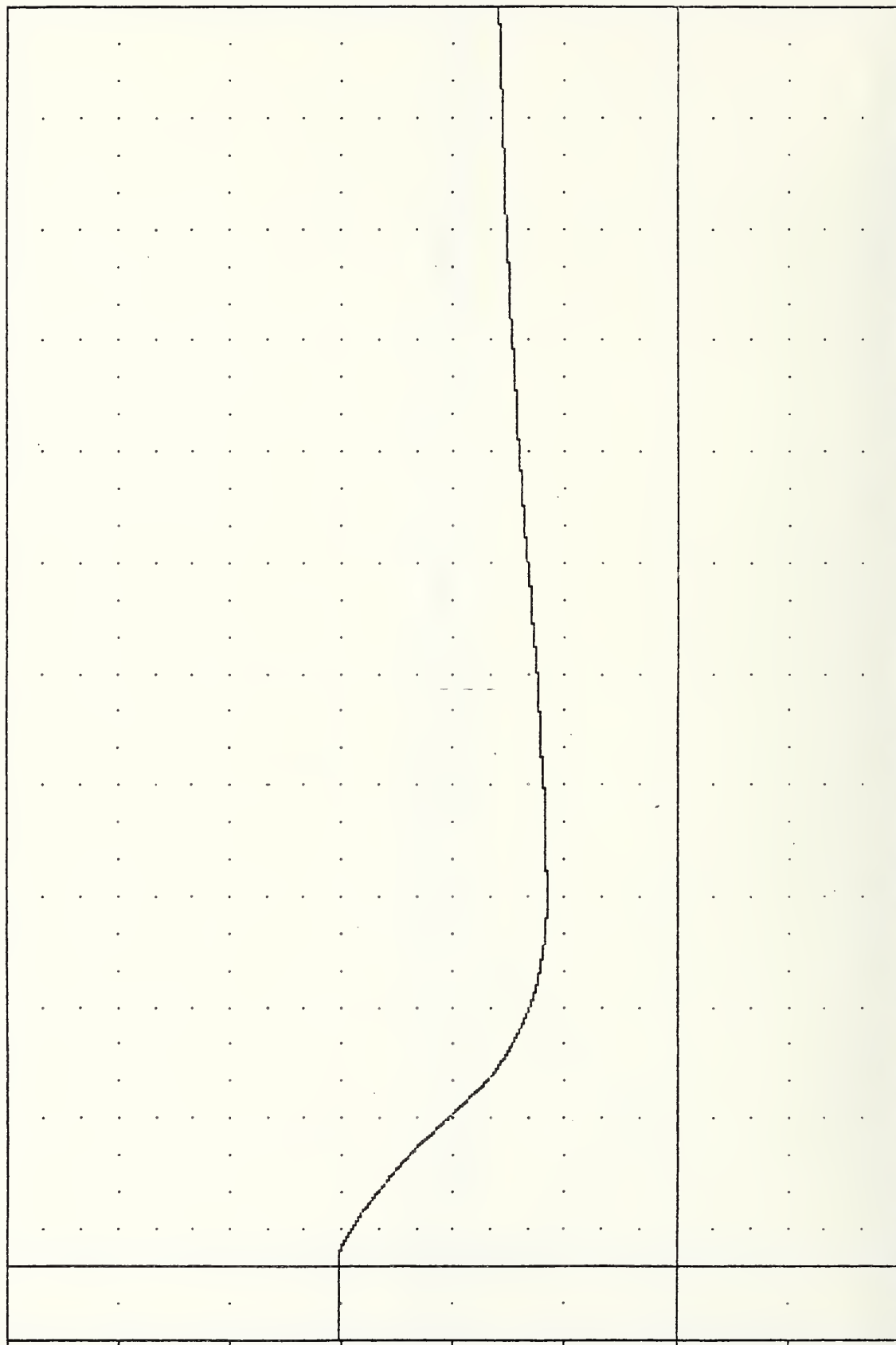
VRT . 851213  
 SI PROTECTION PROD VEHICLE  
 85347000000  
 BRXXV

PLOT DATE 18-DEC-85 14:37:51

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 11.57e 101.00, 30.24 e -17.75

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

DELTA V USING BRXXG

VRT , 851213  
SI PROTECTION PROD VEHICLE  
85347000000  
BRCYV

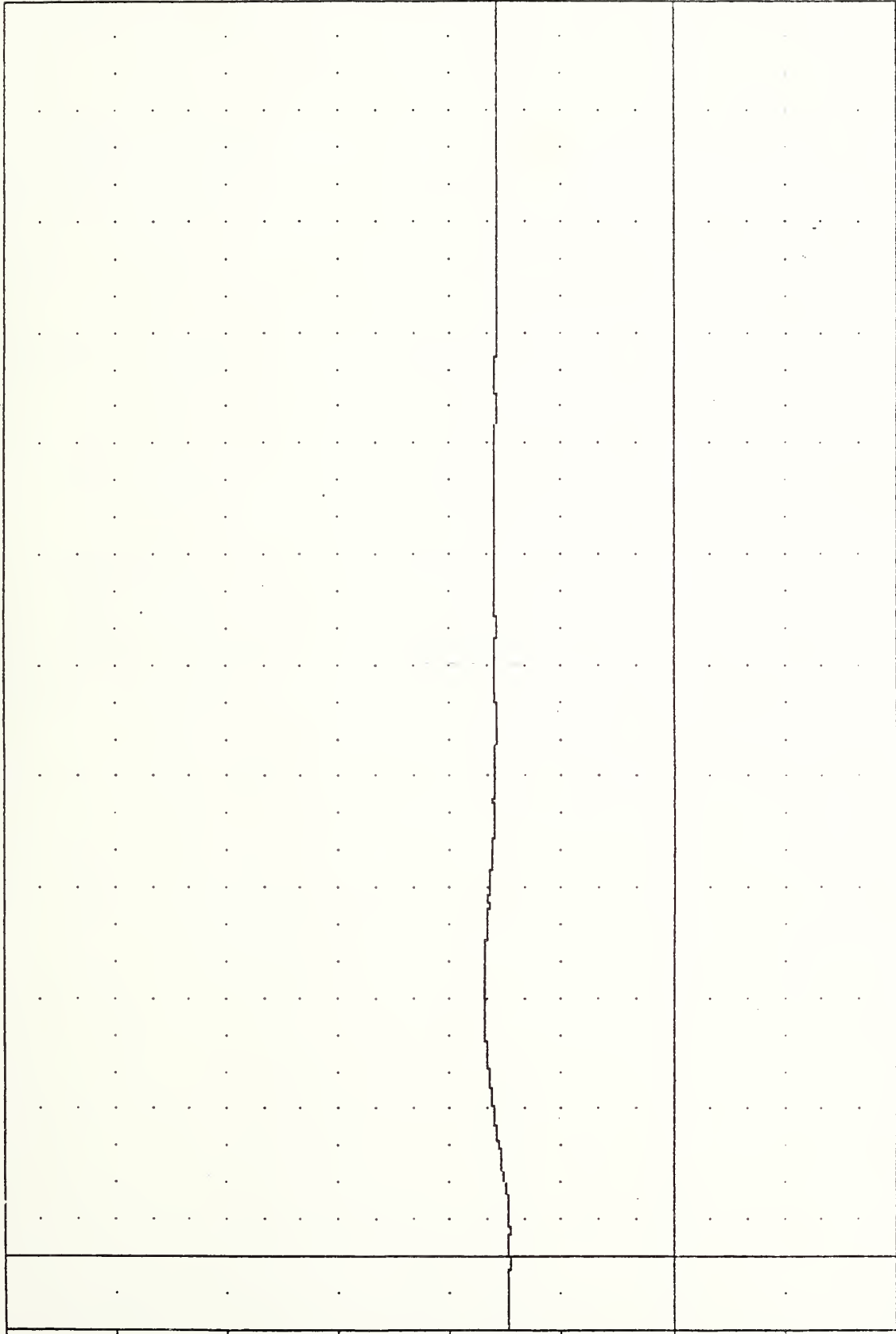
PLOT DATE 18-DEC-85 14:37:51

FILTER = 6LPF 30N/ 949/ -40

MIN. MAX VALUES = 14.57 16.92 73.88

VELOCITY (MPH)

B-113



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO CHEVROLET CELEBRITY

DELTA V USING BRCYV





APPENDIX C  
DUMMY CERTIFICATION

SIDE IMPACT DUMMY CALIBRATION  
DUMMY SERIAL NUMBER 119

TEST/ DATE	CHANNEL	FILTER CLASS	PEAK ACCELERATION (g)	
			SPECIFICATION	TEST RESULT
HEAD 12/4/85	HEAD Y-AXIS	1000	150-175	164.11
THORAX 12/25/85	LEFT UPPER RIB Y-AXIS			
	PRIMARY	180	36-50	41.23
	REDUNDANT	180	36-50	42.62
	UPPER SPINE Y-AXIS			
	PRIMARY	180	16-24.6	21.93
	REDUNDANT	180	16-24.6	21.76
	LOWER SPINE Y-AXIS			
	PRIMARY	180	17.6-26.4	20.17
	REDUNDANT	180	17.6-26.4	20.00
PELVIS 11/27/85	PELVIS Y-AXIS	180	50-65	51.65

Note: Damper test performed 12-4-85  
Velocity = 17.28  
Displacement = 1.45 in.  
Force = 662.80 lbs.

SIDE IMPACT DUMMY CALIBRATION  
DUMMY SERIAL NUMBER 016

TEST/ DATE	CHANNEL	FILTER CLASS	PEAK ACCELERATION (g)	
			SPECIFICATION	TEST RESULT
HEAD 12/4/85	HEAD Y-AXIS	1000	150-175	154.50
THORAX 12/4/85	LEFT UPPER RIB Y-AXIS			
	PRIMARY	180	36-50	41.00
	REDUNDANT	180	36-50	42.54
	UPPER SPINE Y-AXIS			
	PRIMARY	180	16-24.6	21.33
	REDUNDANT	180	16-24.6	21.32
	LOWER SPINE Y-AXIS			
	PRIMARY	180	17.6-26.4	25.24
	REDUNDANT	180	17.6-26.4	---
PELVIS 12/4/85	PELVIS Y-AXIS	180	50-65	49.06

Note: Damper test performed 12-4-85  
Velocity = 17.25  
Displacement = 1.49  
Force = 674.36



Form DOT F 171  
FORMERLY FORM D

*[Handwritten signature]*

STATE OF  
NEW YORK  
DEPARTMENT OF  
TRANSPORTATION



